



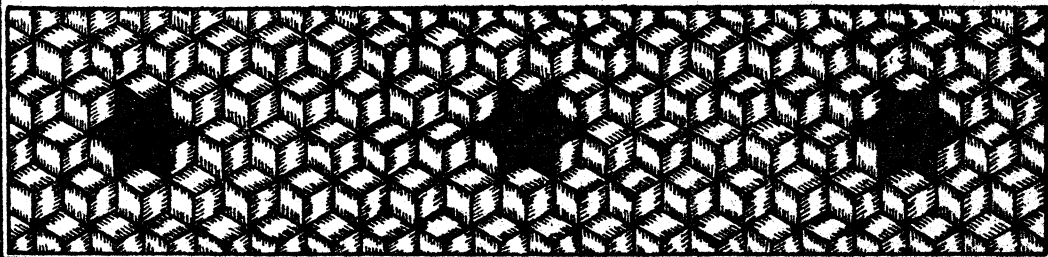
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SEPTEMBER, 1912

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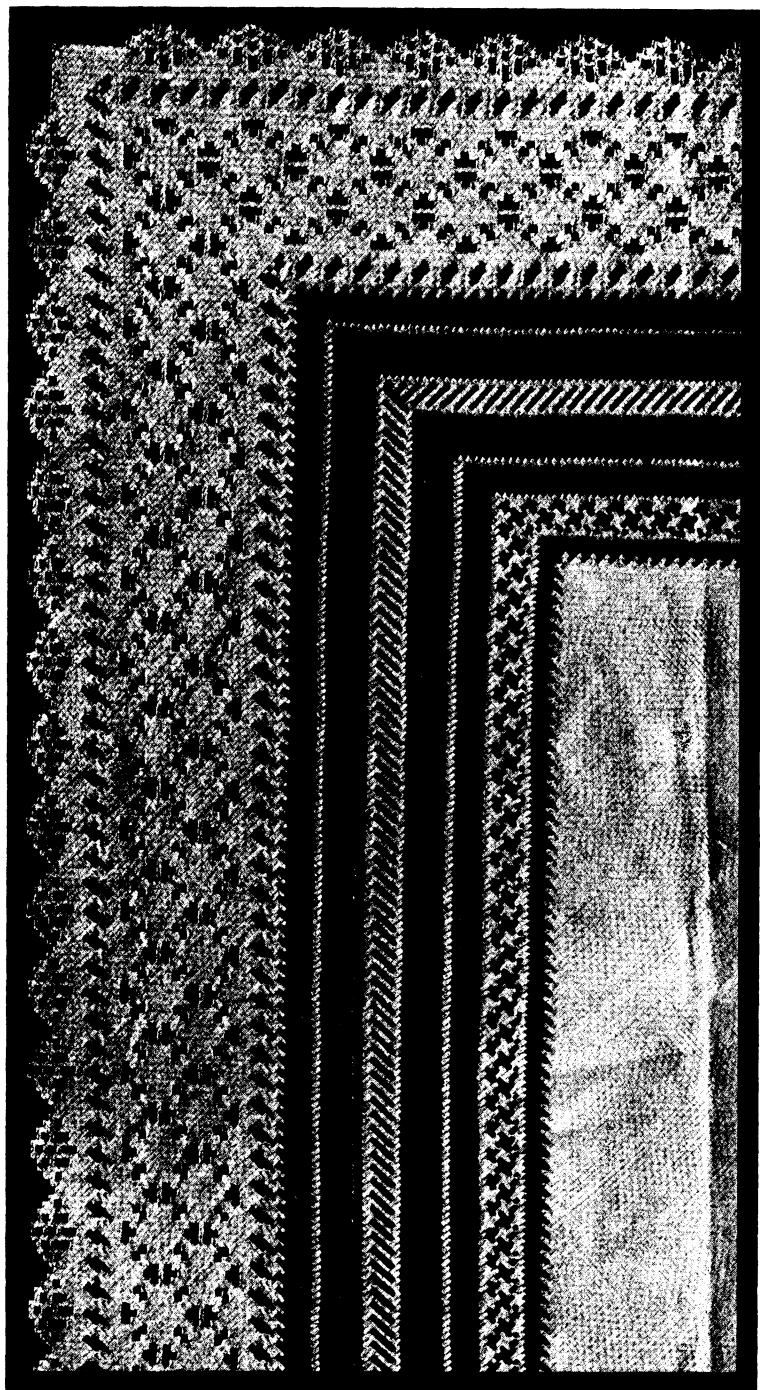


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A high grade Romblon mat.

The Philippine Craftsman

VOL. I

MANILA, SEPTEMBER, 1912

No. 3

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FAILURE IS THE RARE EXCEPTION. MAN WAS MADE FOR SUCCESS, AND HE WHO HAS NOBLY AND PATIENTLY WORKED AT A WORTHY TASK HAS ALREADY SUCCEEDED

—ELBERT HUBBARD

The Philippine Craftsman

VOL. 1

SEPTEMBER, 1912.

No. 3

PHILIPPINE MATS.

By HUGO H. MILLER, JOHN F. MINIER, U. S. ANDES, THEODORE MULLER, and
Mrs. ALICE BREZINA.

THE production of mats in the Philippines is large because of the extensive domestic demand for them. The sleeping mat¹ is used throughout the Christian provinces, and is also found among the Moros. Such mats are of the finer class and are usually more or less highly decorated with colored straws in various designs. For this purpose the buri petates are more widely produced than those made from any other material. Pandan mats are considered stronger and cooler but their use is not so extensive, probably because they are more expensive than the buri mats. In the Visayas, tikug mats are important.

Another use of mats is in the baling of two of the staple products of the Philippines, tobacco and abaca. In the Cagayan valley mats of dried banana petioles are employed. A great many of these are made in Batac, Ilocos Norte, from which place they are shipped to Cagayan. In most cases the tobacco of the Visayas is packed in such mats also. At Argao, Cebu, banana petiole mats are woven as a by-product of the sabá cloth industry. In obtaining the fiber, the outer skin of the petiole is pulled off for stripping, and the remaining portion, which is called "upag," is dried and woven into very coarse mats by children. These are called "bastos"² or "liplip," and are disposed of to the tobacco balers in the town, or are shipped to Cebu and other towns for baling purposes. While sabá sinamay is produced in several of the districts in the Visayas, notably in Bohol, it is not known that the upag is used for mat weaving there.

Coarse buri mats are almost exclusively used in wrapping abaca for the export trade. Since baling is carried on only in large seaports, particularly in Manila and Cebu, the weaving of these mats in certain localities where the buri palm is abundant

¹ Banig, petate, ikamen, dase.

² Meaning coarse stuff.



Plate I. Boy carrying a bastos mat,
Argao, Cebu.

and their transportation to the hemp producing towns are important industries.

While they are not, strictly speaking, mats, plaited sacks³ are woven in the same weave and bear the same relation to sugar and rice as do mats to tobacco and abaca. Most of the domestic rice crop entering into commerce is packed in buri sacks and practically all the export sugar is sent away in them. A few bayones are made of pandan. The production of bayones is an important industry in certain districts.

Mats are also employed throughout the provinces for drying paddy and copra in the sun, in the same manner in which trays are used for sun-curing fruit in temperate regions.

The use of the finer grades of petates for floor mats and for wall decoration is confined to the foreign population in the Philippines. Nevertheless, a considerable number is so utilized. For this trade only mats of the better grades are demanded, and the number sold for the purpose is probably considerably restricted by the fact that few mats are of suitable color combination and of proper design to satisfy foreign taste. As yet there is no known commercial export of Philippine mats. There is a considerable demand for floor mats and mats for wall decoration in Europe and in the United States, but it is improbable that the Philippines can hope to supply any part of it unless designs and color com-



Plate II. Vendors of sleeping mats.

³ Bayones, bayong, canastro, banyot.

binations are vastly improved. Floor mats are used as rugs in the same manner as are the strips of Japanese matting which are so popular all over the world. Round floor mats, somewhat larger in diameter than the round table tops, are also in demand. Small mats can be used as doilies on the table or under the stands of flower pots and the like.

Sleeping mats and mats intended for floors, walls, stands, and mat doilies are the ones which are suitable for domestic and foreign commerce, and industrial education must interest itself in them. The Philippine materials available for weaving these mats are varied and well distributed. With improvement in color combination and design, there should be a large increase in the industry.

BLEACHING AGENTS.

Sunshine is used to bleach all mat straws, but more often they are also treated with boiling water to which certain bleaching agents have been added. Only the most important of these are explained.

Tamarind.—This tree (*Tamarindus indica*) is known in Tagalog, Bicol and Pampanga as sampalok, in Visayan as sambag, in Ilocano as salamagui, and in Palawan as kalampisao. It is a large tree with dense foliage. The leaves are employed as a bleaching agent in boiling water. It is said that the young green fruit can be used for this purpose.

Pandakaki.—The leaves of the plant (*Tabernaemontana pandacqui*) are used as a bleaching agent. This is the name under which it is known, particularly in Pampanga and Cavite. In Palawan it is called alibetbet. It is also known as kampopot in Tagalog and as alibubut and toar in parts of the Visayas. In Ilocano the name is kurribuetbuet.

Lemons.—The juice of the various species and varieties of *Citrus* is employed to some extent for bleaching. It is usually added to boiling water in which the straw is immersed.

Vinegar.—Of Philippine vinegars, those made from palm juices are considered about half as strong as lemon juice. Vinegar from sugar cane juice has probably the same strength. That made from cooked rice is considered about one-fourth as strong as lemon juice.

Alum.—In some towns alum is added to the boiling water in which straw is treated. It is usually employed in combination with other bleaching agents.

DYES USED ON MAT STRAWS.

MORDANTS.

A mordant is a substance employed to fix the dye to the material. In general, different ones are needed for different dyes and various materials. In some cases the mordant is added to the dye liquid; in others the material is previously treated with it before being colored. The most important are the mineral mordants, such as the alumina, the iron, the tin, and the chrome. These are not used in the Philippines with local vegetable dyes. Tannin is also important and is employed to some extent in the Philippines, being generally obtained from the mangrove tan barks. Wood ashes are little used but vinegar and lemon juice are important.

Kolis.—The leaves of this plant (*Memecylon edule*) are commonly used in mordanting buri straw before dyeing it with sappan wood. In Tanay, Rizal, it is employed on sabutan straw with all of the vegetable dyes. It is known as guisian (Laguna), duigim (Ilocos, Pangasinan), kulis (Rizal, Nueva Ecija, Bataan), tagobachi (Leyte), kasigay (Ilocos Norte), agam (Negrito, Cagayan), guisoc-guisoc (Sorsogon), macaasin (Tayabas), baian (Zambales), diyatdiyatan (Tayabas), candong (Pangasinan), dioc (Pangasinan).

NATURAL VEGETABLE DYES.

Numerous natural vegetable dyes are employed in the Philippines. Those used on the mat straws are limited in number. The important ones only are here noted. The whole question of dyes is a most difficult one and hardly warrants the time which has been spent upon investigating the various dye materials, nor the effort which would be necessary to determine definitely the methods by which they can be used on mat straws. The artificial dyes have driven the natural vegetable dyes out of use because they are cheaper and are more easily applied, and because in most cases they produce more pleasing and lasting colors.

Sappan.—This plant (*Caesalpinia sappan*) is known as sapang in Tagalog and Ilocano and as sibucan in Visayan and Bicol. A beautiful dye varying from red to red-orange (see Plate III) is obtained from chips of the wood. This is employed on most Philippine fibers. Lime is sometimes used as a mordant but the straws are usually first treated with kolis leaves.

Turmeric.—This plant (*Curcuma longa*) is known as dilao

throughout the Islands. In Ilocano it is called *kunig*. *Kalaoag* is its name in Negros and Sorsogon, *ange* in Pampanga and *duao* in parts of the Visayas. The yellow dye obtained from the roots is fugitive in the sunlight.

Annatto.—This plant (*Bixa orellana*) is generally known here as *achuete*. It is sometimes called *achiote*. The plant bears burs containing many small reddish seeds from the pulp of which the dye is obtained. It is often employed in combination with turmeric. The result is a yellow orange. The dye fades easily.

Deora.—The use of this plant (*Peristrophe tinctoria*) is confined to the Visayas and Mindanao where it is known by this name and also as *dauda* and *daura*. In Samar the name is *dala-uda*. It is a small bush and is usually grown in the gardens for its leaves and tender stems. A mordant is not used. The color ranges from yellow orange to a deep red orange.

The methods of using these dye materials are explained for each straw.

MATERIALS USED WITH MUD TO OBTAIN DARK GRAYS.

Red or green straws are turned dark gray by burying them in mud to which certain substances (usually containing tannin) are added.

Talisay.—This large tree (*Terminalia catappa*) is common in the Philippines. The leaves are added to the mud in dyeing straw black. From the bark a brown dye may be obtained. It is, however, seldom used. It is universally known as *talisay*. Spanish speaking people call it *almendras*.

Indigo.—Two species of *Indigoferae* are grown in the Philippines and are known as *tagum*. Except with mud they are not used to dye straws.

Tiagkot.—The leaves of this plant (*Pithecolobium subacutum*) are employed on Romblon Island in dyeing buri gray. Other names are *tagayong*, *narandaue*, *saplit* (Cagayan); *carisquis*, *ayamguitan* (Zambales); *tugurare* (Pangasinan); *inip* (Bulacan); *malasaga*, *malaganip*, *tekin* (Laguna); *bahay* (Sorsogon); *tagomtagom* (Samar); *tique* (Rizal).

Kabling.—This plant (*Pogostemon cablin*) is generally cultivated, though it grows where its cultivation has been abandoned. A volatile oil used to keep away insects from textiles is obtained from the leaves. The leaves are used in Tanay, Rizal, in obtaining gray sabutan straw.

Mabolo.—The heart wood of this tree (*Diospyros discolor*) is known as kamagon. The leaves are employed in Tanay, Rizal.

Castor.—This plant (*Ricinus communis*) is seldom cultivated in the Philippines but is found wild in all localities. The "beans" yield the oil. The leaves are added to mud in obtaining gray sabutan straw.

ARTIFICIAL DYES.

It is commonly believed that artificial dyes are less permanent than natural ones. This is seldom the case; as a matter of fact some of the fastest and most valuable dyes are now made artificially and many are not procurable from vegetable coloring matters. Most of the cheaper dyes made from coal tar are fugitive; that is, they fade in sunlight or water or in both. They are often still further cheapened by being adulterated with salt, dextrine and the like. Such are the colors which are usually sold by the Chinese tienda keepers and which have caused artificial dyes in general to come into such ill-repute in the Philippines. Many of these "Chino dyes" contain 95 per cent salt. It is the belief, however, that artificial dyes of a good class, so packed and marketed that they will come cheaply to the hands of the dyers and weavers will drive out of use practically all of the vegetable dyes now employed in the Philippines. The disuse of the natural dyes would not be regretted here, for, with the possible exception of those obtained on sabutan straw in Tanay, much finer colors can be produced with artificial dyes, as to both beauty and fastness. If the time of the workers is considered, the vegetable dyes now employed in the Philippines are more expensive than the artificial dyes, even though the latter are now sold in wastefully small packages and bear the burden of several large profits before they come to the hands of the persons using them.⁴

DYEING.

The process of dyeing is simple. The fluid is prepared in water (usually boiling), and the material is immersed in it. The shade of color obtained depends on the length of time the material is allowed to remain in the fluid or the number of times it is treated, and the strength of the dye. The combination of two different dyes to obtain a third is understood to some extent. In particular, red and yellow are mixed to obtain orange.

⁴ The Bureau of Education has taken steps to procure series of dyes suited to each one of the mat straws and other important fibers used in household industries and industrial instruction in the Philippines. It is believed that these will at once solve the local problem.

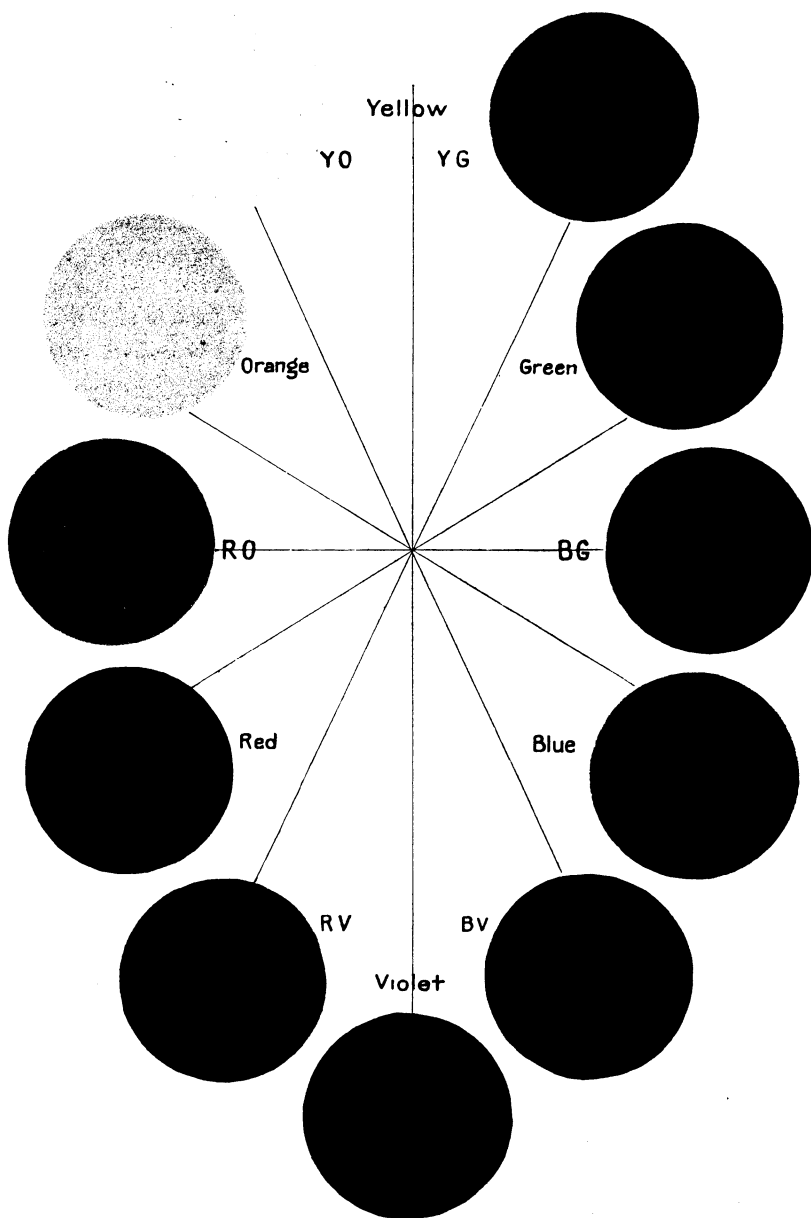


Plate III. Color Chart.



SUGGESTIONS ON THE USE OF COLORS IN MATS.

STANDARD COLORS.

The three primary colors are red, blue and yellow. The three secondary colors are obtained by combination of the three primary colors, and are orange, green and violet. Orange is made by a combination of yellow and red, green is a combination of blue and yellow, and violet is the combination red and blue. Most of the dye materials explained in the preceding pages do not produce standard colors and so, when combined, do not result in the expected secondary color. Often those called red are, in point of fact, red-violet (see Plate III). In the same way dyes called yellow are yellow-orange. A mixture of yellow-orange and red-violet would produce a muddy color. Dye called green may be really blue-green or yellow-green, and combined with red, will make a muddy color.

The above remarks on standard complementary colors are only valid for pure colors and it is only by much experimentation that pleasing tones can be obtained by a combination of the dyes used on straws in the Philippines.

HOW TO TONE DOWN BRILLIANT COLORS.

Many of the colors used in Philippine mats are very brilliant. A little brilliantly colored straw, properly combined with subdued colors such as gray or one of the natural colors of Philippine straws, is pleasing, but the abundant use of brilliant straws, such as is sometimes seen in mats of solid color, is to be discouraged.

All brilliant colors may be subdued by adding to them their complementary color. Thus a brilliant red may be subdued by adding to it a small amount of green and in the same way brilliant green may be toned down by mixing with it a small portion of red. If too much of the complementary color is added the result will be gray. In the same way all complementary colors will subdue one another. In Plate III the principal colors have been so arranged that the complementary colors are directly opposite each other and are connected by lines. Any two colors connected by lines on this chart will tone down each other and, if mixed in proper proportions, will result in gray.

It is probable that any straw which has been dyed too brilliant, can be closely matched to one of the colors given on Plate III. Consequently its complement can be determined and, by experimentation, the brilliant color toned down. Usually only an exceedingly small amount of its complement is needed to tone down a given color.

COLOR COMBINATION.

In general too many different colors appear in the Philippine mats, and most of these are brilliant. It is often true that a large amount of a given brilliant color is offensive to the eye, and yet the addition of a little of it greatly enhances the beauty of the mat. Often color combinations are not harmonious. Particularly bad effects are obtained with red-violet and yellow or yellow-orange. Red-violet with blue-green is another unfortunate combination.

Certain rules have been set down for combination of colors. (1) A given color with its tints and shades⁵ may always be safely combined; (2) complementary colors may always be safely combined; (3) the tints and shades of complementary color may always be safely combined. (4) Any three colors occurring in sequence on the color chart may be combined in that sequence.

The following notes on the use and combination of the colored straws from Tanay, Rizal, and from Romblon, and those shown on the charts accompanying the dyes of Leopold Cassela & Co., are given. The figures refer to the numbers given the colored straws on these charts. These dyes were evolved for the Bureau of Education especially for Philippine mat straws and will soon be available in the market. The notes have been prepared in accordance with the rules above outlined, and, if they are followed closely, no unfortunate color combination can result.

COLORS OBTAINED FROM THE NEW DYES.

The sample straws on these cards are made with the following dyestuffs:

Colors.	Numbers on chart.	Dyestuffs.
Yellow Yellow-Orange	No. 1	Paraphosphine G.
Violet	No. 2	Methylviolett BB 72 No. 1.
Brown	No. 3	Rush Brown B.
Orange Red-Red	No. 4	Rush Red S A.
Yellow-Green	No. 5	Rush Green T B.
Blue-Violet	No. 6	New Methylene Blue R.
Red-Violet	No. 7	Magenta Prima.
Black	No. 8	Rush Black M.
Chocolate	No. 9	Rush Brown X.
Red	No. 10	Rush Red J S.
Yellow Orange-Yellow	No. 11	Auramine II.
Blue-Green	No. 12	Japan Green.
Red Violet-Violet	No. 13	Methylviolett R No. 1.
Red-Orange	No. 14	Chrysoidine A G.
Blue Blue-Green	No. 15	New Methylene Blue N.
Violet Red-Red	No. 16	Safranine S 150.

⁵ A tint is a paler or less intense tone than the standard color. A shade is a darker, more intense tone of the standard color.

Complementary or opposite colors on the color chart are said to be harmonious. Their relation is made more pleasing, however, if one color, usually the more brilliant, is used in very small amount. In many cases in the above combinations colors not exactly opposite have been united. They usually contain a mixture of a primary color common to both. Brown, Black, Chocolate and Dark Red are complicated mixtures and may be analyzed with a chart which will appear later. Many of these dark colors would harmonize with one another, but would be so dark that they would not be pleasing. In every one of these combinations, the natural straw background figures as another color, and that is why the especially good combinations, as will be noticed, contain browns, yellows and reds, colors which blend particularly well with the background. Red-Violet No. 7 can be used with only a very few colors, and never with Yellow-Yellow-Orange No. 1. Yellow Yellow-Orange should be used cautiously.

In Sabutan straw, No. 1, Yellow, must be used sparingly. When used in combinations in place of No. 1, Yellow Yellow-Orange, the design should be an open one, rather than solid. Violet Red-Red, No. 16, when being used in place of Red No. 10, must be used in the same way, and only in places where very, very little is called for. No. 11 is a color that clashes with even a natural straw, so is not advisable in any combination or alone. No. 13 is not a necessary color when No. 2 and No. 6 are available.

In placing the color upon the space to be decorated, the heavier colors should usually appear on the outside and near the edge of the space, although a border may sometimes be outlined with darker color on both inside and outside edges.

The following combinations of these colored straws will prove harmonious. The numbers correspond to those used on the chart and the different kinds of type indicate the proportions of the color to be used—*little*, MEDIUM AMOUNT, MUCH. The relative positions of the colors must also be observed and the given order followed when more than two colors are combined.

BROWN (3) *Yellow-Yellow Orange* (1). Especially good.

Black (8) YELLOW-YELLOW ORANGE (1).

Chocolate (9) YELLOW-YELLOW ORANGE (1).

RED-ORANGE (14) CHOCOLATE (9) *Yellow-Yellow Orange* (1). In this case, the heavy color, 9, comes in the center of the design, but is necessary to separate Nos. 14 and 1.

VIOLET (2) BLUE-GREEN (12) *Red-Orange* (14).

- Violet* (2) RED-ORANGE (14) BLUE-BLUE GREEN (15).
Brown (3) alone on natural background.
 BROWN (3) *Yellow-Green* (5). Especially good.
Brown (3) BLUE-GREEN (12).
 BROWN (3) RED-ORANGE (14) *Red* (16).
Brown (3) *Red-Orange* (14). Especially good.
Brown (3) BLUE-BLUE GREEN (15) *Red-Orange* (14). Especially good.
Brown (3) RED (16). In sabutan straw, use No. 4 or 10 in place of No. 16.
Black (8) BROWN (3) RED-ORANGE (14). Especially good.
 ORANGE-RED RED (4) *Blue-Green* (12). Use No. 15 instead of 12 with sabutan.
 BLUE-BLUE GREEN (15) BLUE-GREEN (12) *Orange-Red Red* (4). Especially good.
Black (8) ORANGE-RED RED (4). Especially good.
 YELLOW-GREEN (5) BLUE-BLUE GREEN (15) *Red-Orange* (14).
 RED-VIOLET (7) BLUE-BLUE GREEN (15) *Yellow-Green* (5). Especially good.
 BLACK (8) YELLOW-GREEN (5). Use this combination with an open design—not solid—, and do not use much of each.
 BLUE-GREEN (12) *Yellow-Green* (5).
 BLUE-BLUE GREEN (15) *Yellow Green* (5).
Blue-Violet (6). On a natural ground.
 BLUE-VIOLET (6) *Red-Orange* (14).
 CHOCOLATE (9) BLUE-GREEN (12) *Red-Orange* (14). Especially good.
Chocolate (9) BLUE-GREEN (12) *Red-Orange* (14). Especially good.
 BLUE-BLUE GREEN (15) RED-ORANGE (14). Especially good.
 BLUE-BLUE GREEN (15) *Red* (16).

ROMBLON BURI VEGETABLE COLORS.

- 1—Black.
- 2—Gray-green.
- 3—Natural.
- 4—Orange.
- 5—Dark red.

In Romblon buri straw the following combinations will be harmonious:

- Nos. 1, 2 and 3 in accordance with Rule 4.
- Nos. 2, 3 and 4 in accordance with Rule 4.

Exception to Rule 2: No. 5 is inharmonious with No. 4.

It will be noticed that these colors depend for their harmony on their order or sequence and their quantity (in this case equal parts of all three). No. 3 being a neutral color, great quantities of it may be used with any other colors. There is danger, however, in getting too much of one of the other two colors. No. 4 is a very strong color and a little will be pleasing while much will be offensive. It is not well to use it alone on a ground of No. 3. No. 5 may be used alone with a ground of No. 3; No. 1 with a ground of No. 3; No. 2 with a ground of No. 3; No. 3 with a ground of No. 2; Nos. 1 and 3 on a ground of No. 2, with a very small quantity of No. 1; equal proportions of 1 and 4 may be combined on a ground of No. 3; Nos. 2 and 4 on a ground of No. 3, a *very* small quantity of No. 4 being used.

TANAY SABUTAN COLORS (MOSTLY VEGETABLE).

- 1—Black.
- 2—Blue-green.
- 3—Natural.
- 4—Yellow.
- 5—Red-orange.
- 6—Red-orange red.

It will be necessary to use No. 3 on a ground work. Mats made entirely of any of the other colors would hardly be harmonious on a floor or wall, if there were any other furnishings. Nos. 1, 2, 5 and 6 may be used separately upon a ground of No. 3; No. 2 in large quantity; No. 1 in small ground of No. 3; No. 2 in equal quantity with No. 5 upon a ground of No. 3; No. 5 in equal quantity with No. 6 upon a ground of No. 3; No. 6 in large quantity, with No. 2 in small quantity, upon a ground of No. 3; No. 5 in large quantity, with No. 1 small, on a ground of No. 3.

STRIPPING MAT STRAWS.

Philippine mat straws can be divided into three classes—palm straws, pandan straws and straws obtained from sedges. The first two are obtained by stripping the leaves of the plants into narrow lengths. For this purpose there is used in most localities a small gauge held between the thumb and index fingers. A knife blade fitting in the notches serves as the cutting edge. The leaf is held in one hand and the gauge and knife in the other, the edge of the leaf being drawn through the gauge. This is generally made out of the stiff part of the leaf, though,

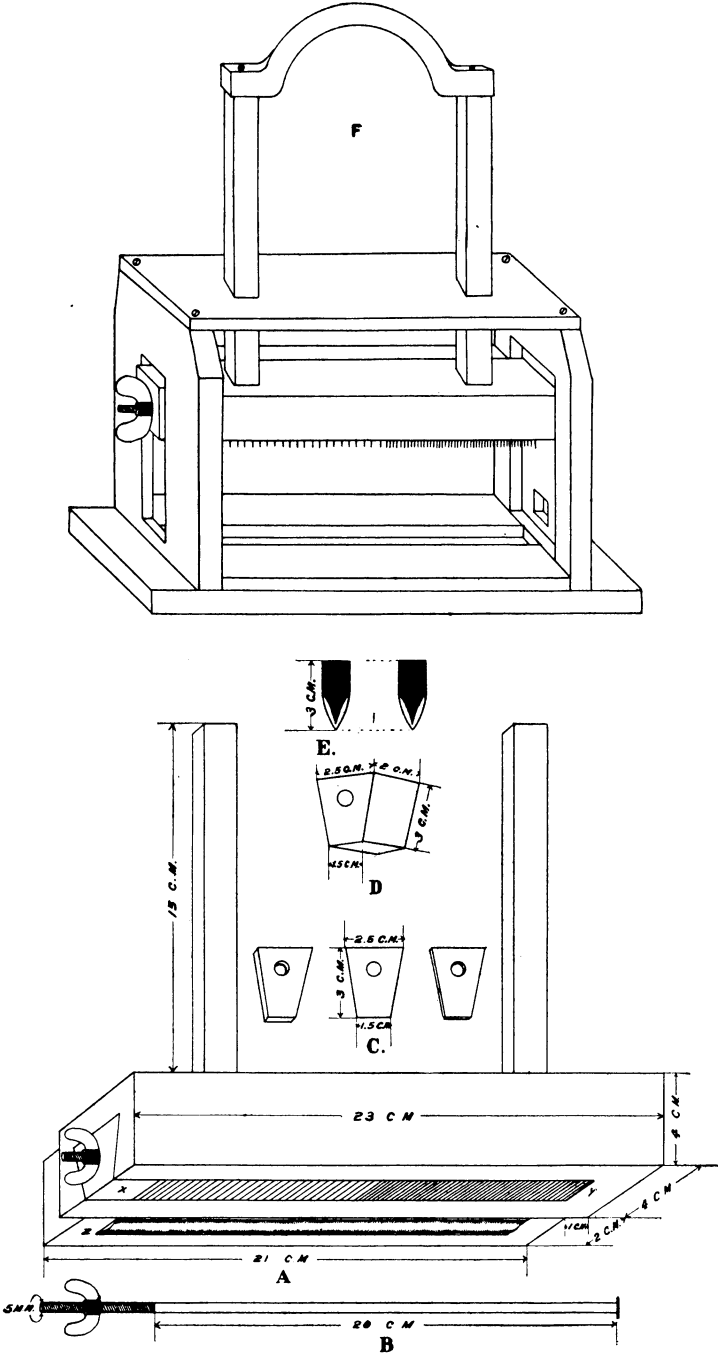


Plate IV.

occasionally, of a piece of rattan, bamboo or leather. At best it serves for only a few hours of use, when it is thrown away and another made.

When the notch becomes worn, the blade moves about in the gauge causing the width of the straws to vary, and when a new gauge is made there is always more or less variance in the position of the new notches. This method is very slow, as but one strip can be cut at a time; and, until the operator becomes expert in the use of the gauge, many of the strips are worthless. When used in the school room, each pupil has to prepare his own material. This causes waste of materials and a constant littering of the floor.

For stripping sabutan leaves, the mat weavers of Tanay, Rizal, use a kind of comb which is discussed under the heading

"Sabutan." The leaves are pulled over this comb before being dried. As sabutan is parallel veined it is very easy to strip it thus, the teeth of the comb following the leaf fibers. The comb produces several uniform straws with one stroke.

The object of contriving the stripping machine illustrated and described here was to furnish a quick means of preparing palm and pandan straws with uniform widths and clean cut edges. Forms of it have been in use for some time and the model noted here has been tried out for a year. By its use one pupil can prepare materials for the whole class, or else the



Plate V. Stripping with a gauge.

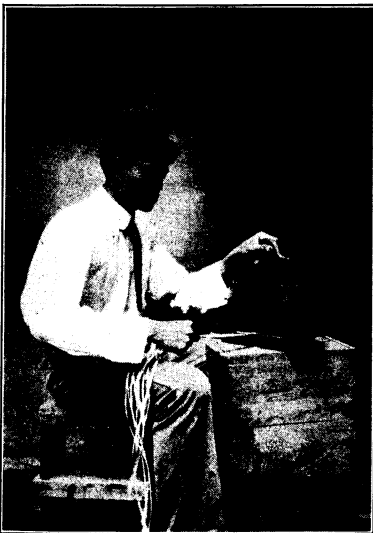


Plate VI. Stripping buri straw with the Andes stripper.

teacher can have all the materials prepared beforehand if it is so desired. This is half the problem of teaching the weaving of hats or mats.

This stripper is made wide enough for inserting teeth three widths apart, so that without adjusting these teeth three widths of straw may be cut. By changing the teeth in the adjustable gums, any width desired may be obtained.

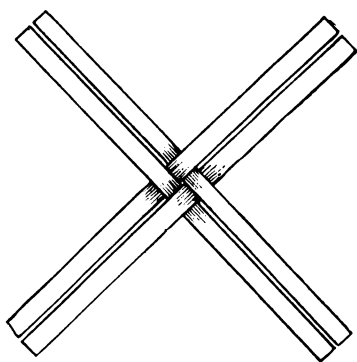
It is best to make this apparatus of hard wood, especially the piece represented by Fig. A. A is a block of wood 23 cm. by 4 cm. by 4 cm., containing the groove XY. This groove is the size and shape of C, being 2.5 cm. wide at the top, 1.5 cm. at the bottom, and 3 cm. high. C is one of the blocks which slides in the groove XY. These blocks are made of different thicknesses, about 2, 3, and 4 mm., and are of hard wood or metal. The rod B passes through these blocks and tightens on the block D, or X by means of a thumb screw. Z is a wooden roller 19 cm. long and 1.5 cm. in diameter. This should extend 2 mm. below the level of the main surface. It is placed in a groove made in a separate piece of wood from the principal block and is fastened into the principal block by means of screws.

The teeth (see C) are made of clock springs or other thin sharp metal. They are 3 cm. long and 1 cm. to $1\frac{1}{2}$ cm. wide. The two upright pieces at both ends contain grooves on the inside in which the block-head slides up and down.

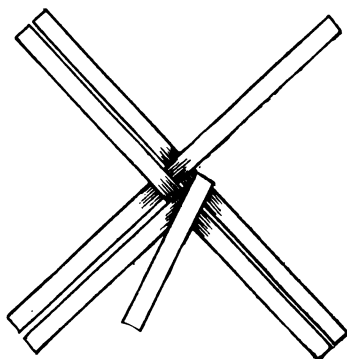
To operate this device, the block-head containing the teeth is raised by the handle; the leaf is placed under the teeth, and the block-head is dropped. The teeth pass through the leaf into a groove underneath. The leaf is now pulled through by the hand as illustrated in Plate VI.

KINDS OF WEAVES.

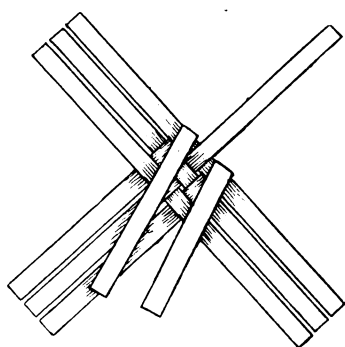
With respect to their weaving, Philippine mats divide themselves into five groups and are here arranged according to their difficulty. They are (1) the over and under weave found in most simple mats, such as those made of buri straws, pandan straws, and sedges; (2) the sawali weaves, which employ the floating straws for making "woven in" designs and panels for figured sabutan and tikug mats; (3) the open work weaves of the Romblon buri mats; (4) the circular mats which employ the hat weaves, either with or without "woven in" designs; (5) the hexagonal weave; and (6) the embroidered mats in which the designs are later added. In difficulty, and in place in a course of instruction, embroidered mats follow the simple over and under weave.



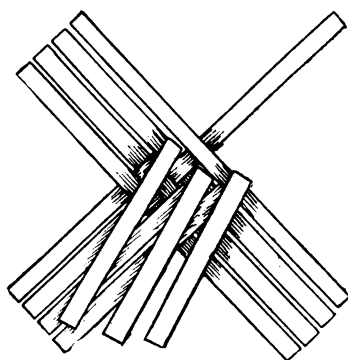
Step 1.



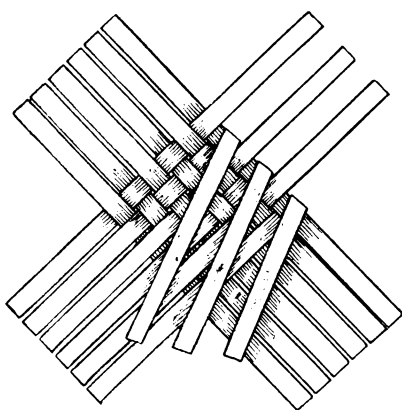
Step 2.



Step 3.

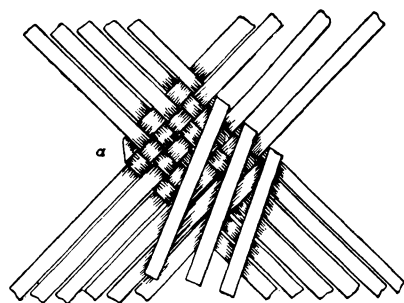


Step 4.

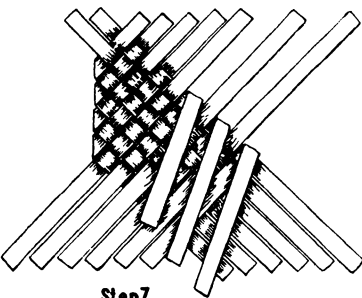


Step 5.

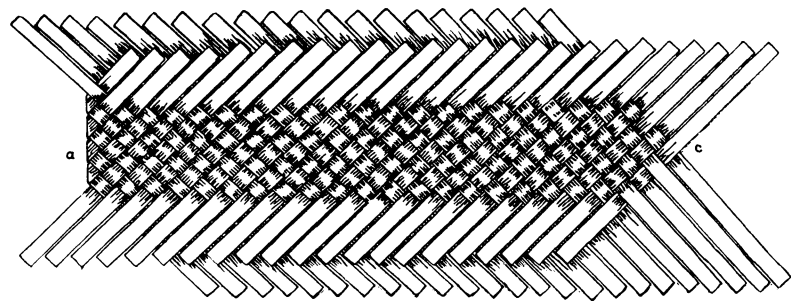
Plate VII.



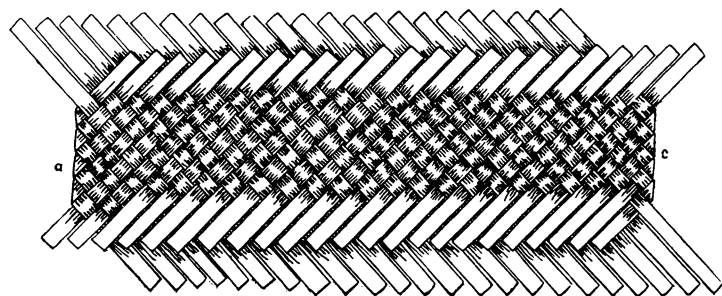
Step 6.



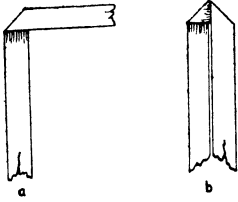
Step 7.



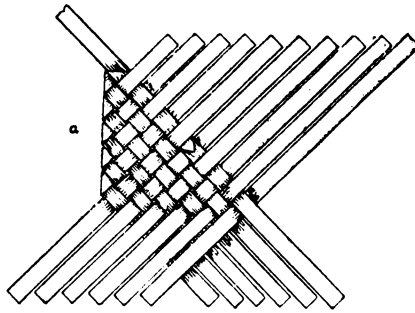
Step 8.



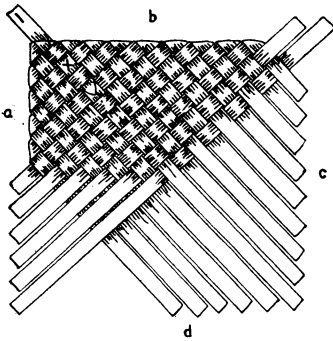
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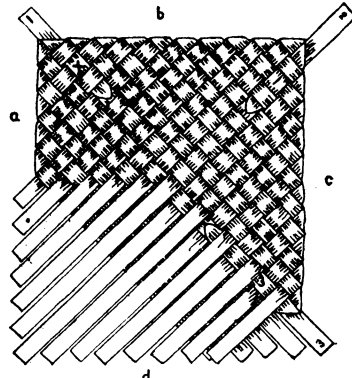
Step 10.



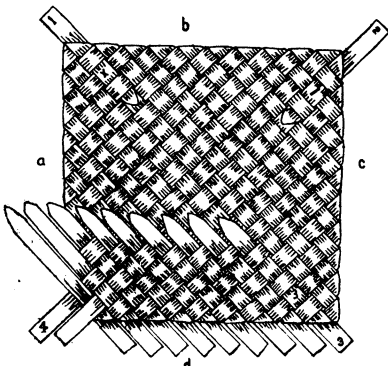
Step 11.



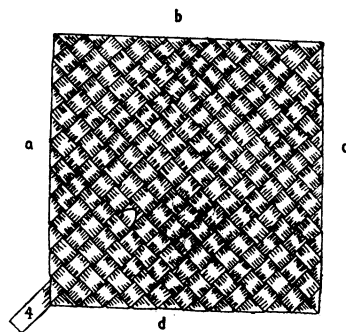
Step 12.



Step 13.



Step 14.



Step 15.

OVER-AND-UNDER WEAVE.

This weave is the simplest and is the one which beginners should first take up. It is made by weaving over one and under one continuously. Until this is thoroughly mastered children should not be allowed to begin the more difficult weaves.

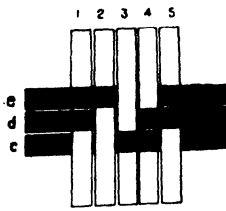
The steps have been diagrammed in figures sufficiently large and clear in Plates VII, VIII, and IX that a detailed explanation is not necessary. Step 1 shows the position of the first four straws as they are placed upon the table or desk; steps 2, 3, 4, and 5, continued additions and weaving; steps 6, 7, and 8, turning the edge *a* on the end of the mat; step 9, turning the opposite edge *c*; step 10, the double turn of the corner straw; step 11, the corner turn woven in the mat at corner No. 1, lapping over the straw already woven; step 12, the continuation of the second edge *b*; step 13, the turning of the second and third corners; and steps 14 and 15, finishing the mat.

In weaving large mats, it is customary to begin at one end of the mat, preferably, near the left hand corner, as the mat lies before the weaver. The weaving continues along the end until half of the desired width of the mat is reached, when the first corner is turned. Now the weaving continues down the side and in, as far as the middle of the mat. When the desired length is woven, the second corner is turned and the first half of the mat completed.

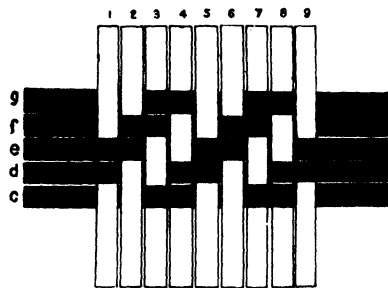
As the straws are not generally long enough without splicing, new straws are now added by lapping them from two to three inches upon the projecting ends of the straws already woven. This makes a narrow strip of double thickness down the center running the length of the mat. The weaving now continues as before until the desired width of the mat is attained, when the third corner is turned. The remainder is woven and finished at the fourth corner as shown by steps 14 and 15.

Some weavers begin at the sides, and some few, even at the corners; but this should not be encouraged since it results in making two or more seams, where the straws lap.

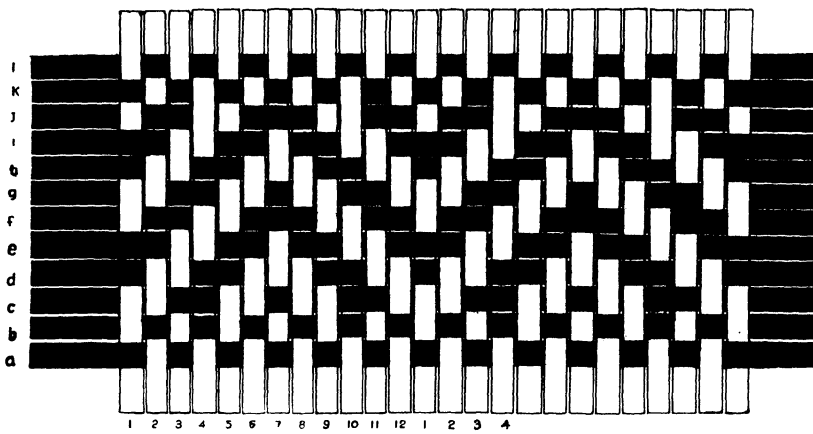
Care must be taken to weave all parts of the mat equally close and keep the edges perfectly straight; otherwise the mat when finished will be lop-sided, and consequently of no value. In weaving tapering grasses like tikug, which have ends of slightly different sizes, the opposite ends of the straws should be alternated. This prevents one edge of a mat from building faster than the other.



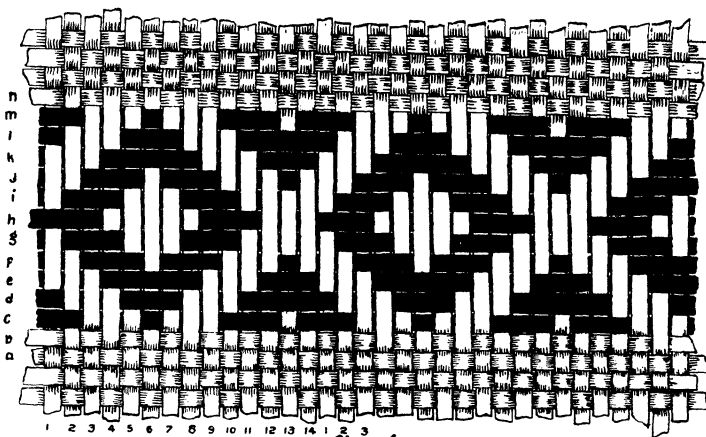
Step 1.



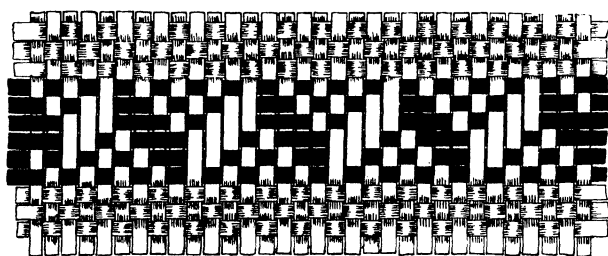
Step 2.



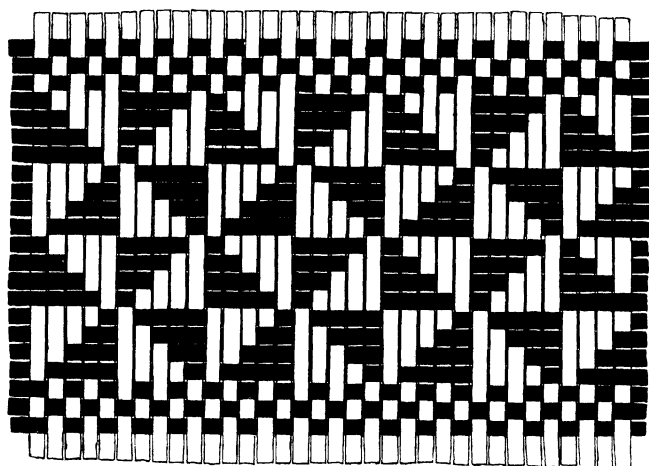
Step 3.



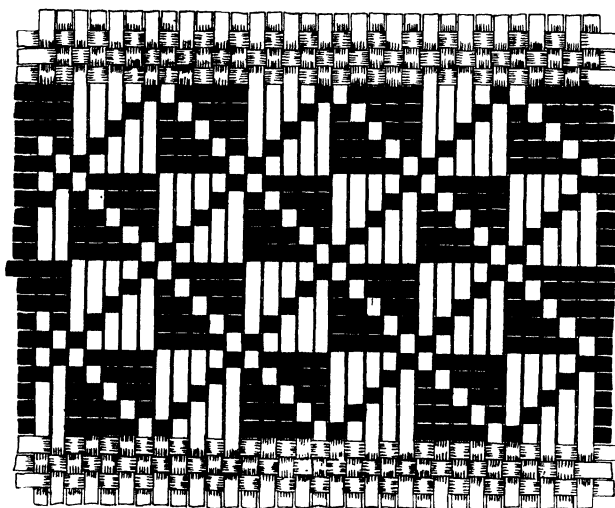
Step 4.



Step 5.



Step 6.



Step 7.

SAWALI WEAVES.

SIMPLE SAWALI.

By sawali weave is meant all "woven in" designs that are not woven by *ones* as in the over and under weave. They may be woven regularly by *twos*, *threes*, etc.; or they may "switch" the floating straws so as to form a variety of artistic figure designs. In fact there is no limit to the number of designs that may be thus made.

Steps 1 and 2 illustrate the beginning of a sawali weave by *twos*. First 1, 2, 3, 4, 5 are laid down; then *c* is put under 1-2, over 3-4, and under 5; *d* over 1, under 2-3 and over 4-5; *e* over 1-2, under 3-4, and over 5. This process is continued, advancing one straw each time until the desired amount is woven. If the weaving is by *threes* or *fours*, the same principle is followed; that is, the straw goes over three and under three advancing one straw each time.

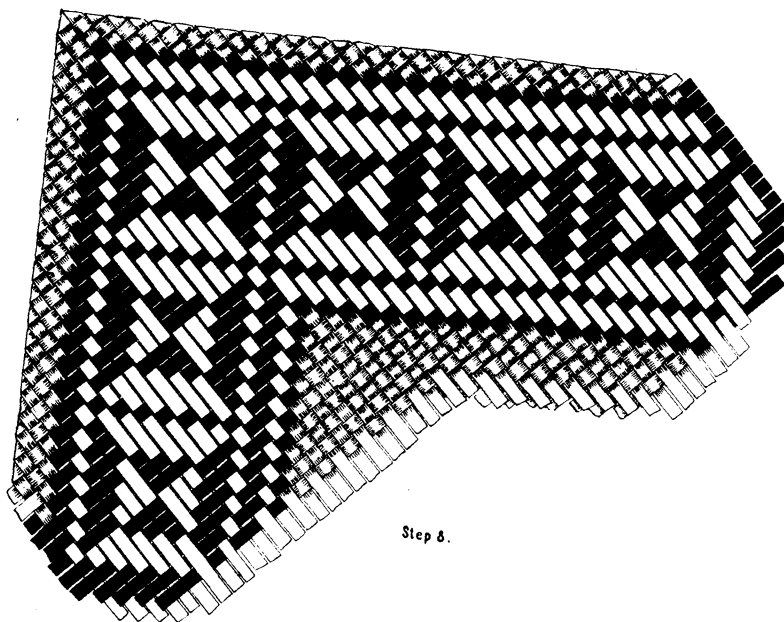
PANELS.

Most "woven in" mat designs are arranged in panels, with a ground between, as this gives a more pleasing effect than a continuous figure weaving. Panels may be woven either lengthwise, step 8, crosswise, step 8, diagonally across the mat, step 4, or in zigzags, step 3. They are most easily woven when arranged diagonally, for then the colors may be carried from border to border without mixing with the ground outside of the panel. Checks are made by weaving cross panels at regular intervals.

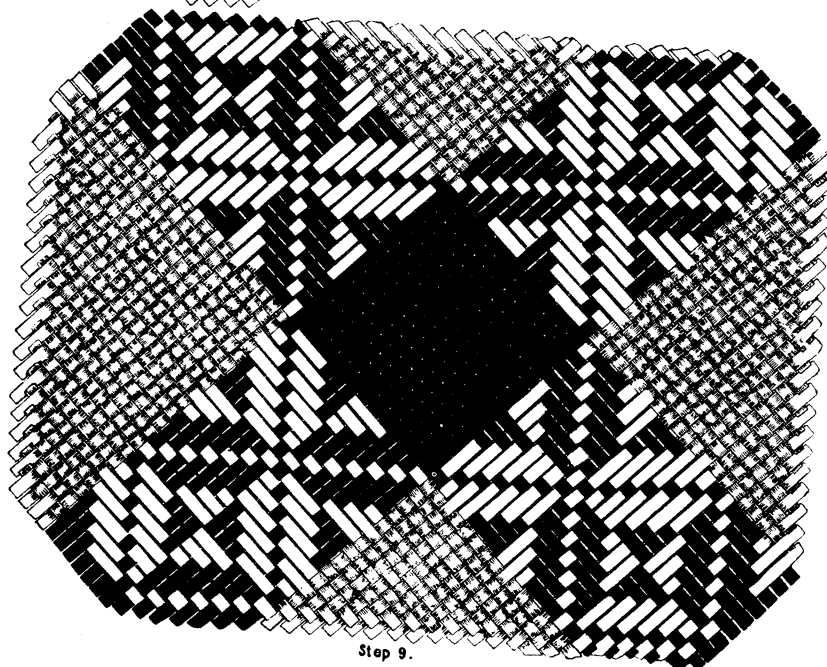
In making parallel panels (panels parallel either to the sides or ends), more than two colors can rarely be used to advantage.

Step 3 illustrates the weaving of a zigzag sawali panel. The straws, *a*, *b*, *k*, and *l* are woven by *ones*. It takes twelve straws one way and nine the other to make this panel. If a wider panel is desired, the same weaving is repeated as often as necessary.

The straws *a*, *b*, *k*, and *l* are woven by *ones*. Put *l* over *b* and *c*, under *de*, over *fg*, under *hi* and over *j*. Put 2 under *b*, over *cd*, under *ef*, over *gh*, under *ij* and over *k*. Put 3 over *b*, under *c*, over *de*, under *fg*, over *hi* and under *jk*. Put 4 under *bcd*, over *ef*, under *gh*, and over *ijk*. Put 5 over *bc*, under *de*, over *fg*, under *hi*, and over *j*. Put 6 under *b*, over *cd*, under *ef*, over *gh*, under *ij*, and over *k*. Put 7 over *b*, under *c*, over *de*, under *fg*, over *hi*, under *jk*. Put 8 under *b*, over *cd*, under *ef*, over *gh*, under *ij* and over *k*. Put 9 over *bc*, under *de*, over



Step 8.



Step 9.

Plate XII.

fg, under *hi* and over *j*. Put 10 under *bcd*, over *ef*, under *gh*, and over *ijk*. Put 11 over *b* under *c*, over *de*, under *fg*, over *hi*, and under *jk*. Put 12 under *b*, over *cd*, under *ef*, over *gh*, under *ij*, and over *k*. Then the whole operation is again repeated. It will be seen that the manner of weaving of 2 and 12, 3 and 11, 4 and 10 and 5 and 9 is the same.

Step 4 illustrates the diamond figure design, woven by threes, with 11 straws in width.

Put 1 under *cd*, over *efg*, under *h*, over *ijk* and under *lm*. Put 2 under *c*, over *def*, under *ghi*, over *jkl*, and under *m*. Put 3 over *cde*, under *fghij*, and over *klm*. Put 4 over *cd*,

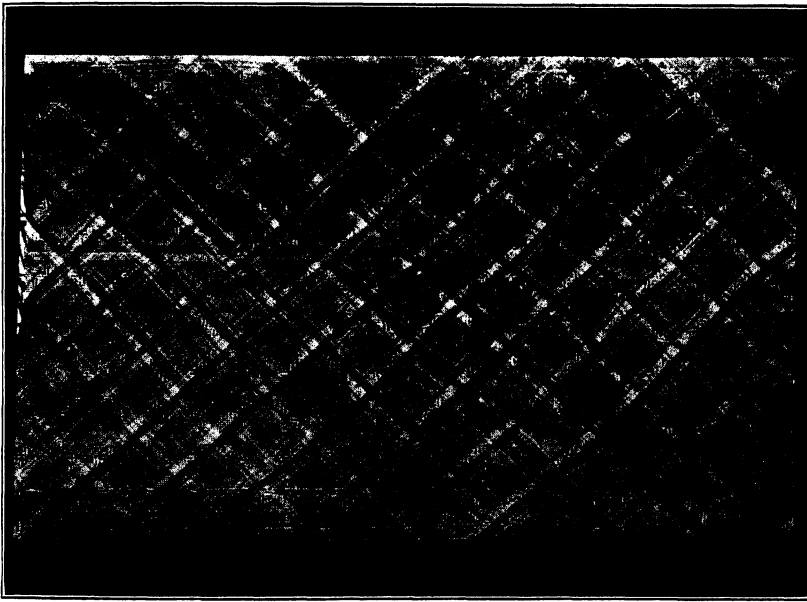


Plate XIII, fig. 1. Mat with woven-in border showing confusion in design.

under *efg*, over *h*, under *ijk*, and over *lm*. Put 5 over *c*, under *def*, over *ghi*, under *jkl* and over *m*. Put 6 under *cde*, over *fghij*, and under *klm*. Now the order reverses, 7 being the same as 5, 8 as 4, etc., until the other half of the figure is completed at 11. Now put 12 under *cde*, over *fghij*, and under *klm*. Put 13 over *c*, under *def*, over *ghi*, under *jkl* and over *m*. Put 14 under *cde*, over *fghij* and under *klm*. Now 1 repeats itself, and the second figure is woven as the first. It is believed that with the aid of the large illustrations here presented the teacher or pupil can now follow for himself the other designs given, without a detailed explanation of each step.

"WOVEN-IN" BORDERS.

Woven-in border designs may be made in three different ways, viz: *First*, by weaving the design around the mat, using the same straws that run through the body. (See Plate XIII, Fig. 1.) In this case the color effect is one of confusion, since the dyed straws used in the designs of the body of the mat have no relation to the design of the border when they enter it. *Second*, by weaving the border and the body of the mat of different straws, uniting them at the inner edge of the border by a loop as described in the Romblon mat. (See Plate XVI.) *Third*, by lapping the colored straws desired in the border, upon the projecting ends of the straws of the body of the mat. (See

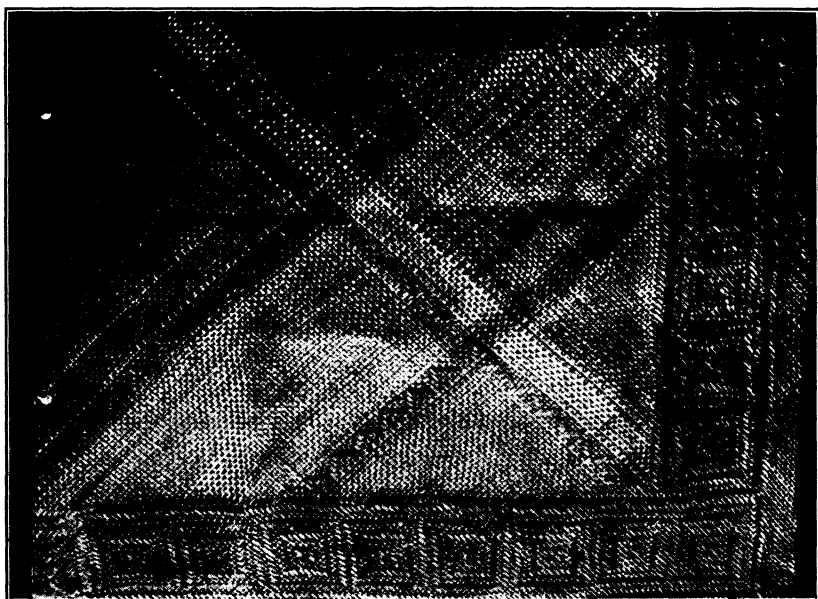


Plate XIII, fig. 2. Mat with woven-in design made by lapping straws.

step 8, Plate XII.) These latter two methods are much more artistic, as a uniform color effect appears throughout the border. (See Plate XIII, Fig. 2.)

THE ROMBLON MAT.

MAKING OPEN WORK.

Simple open work is illustrated in Plate XIV.

Weave corner Z using straws *a, b, c, d, e* and *f*, letting *f* float at both ends. Weave *g* turning upward and over *f*, then making a double corner at *y*, passing under *f*, to the left and over *f*, and

let float. Weave *h*, *i*, *j*, *k*, *l* and *m* in solid weave. Turn *h* under *i* and over *j*. Turn *j* upward and over *i*, to the left under *f*, upward over *g*, double corner at W, passing down under *g*, over *g*, and floating. Turn *m* upward over *l* to the left, under *i*, upward over *f*, to the left under *g*, upward over *j* making a double corner at X, passing under *j*. The straws *j* and *m* alternately cross each other to corner V.

The other half of this open design is an exact duplicate of this weaving, and the remaining designs have the same turns as the one explained, except that in opposite designs the straws

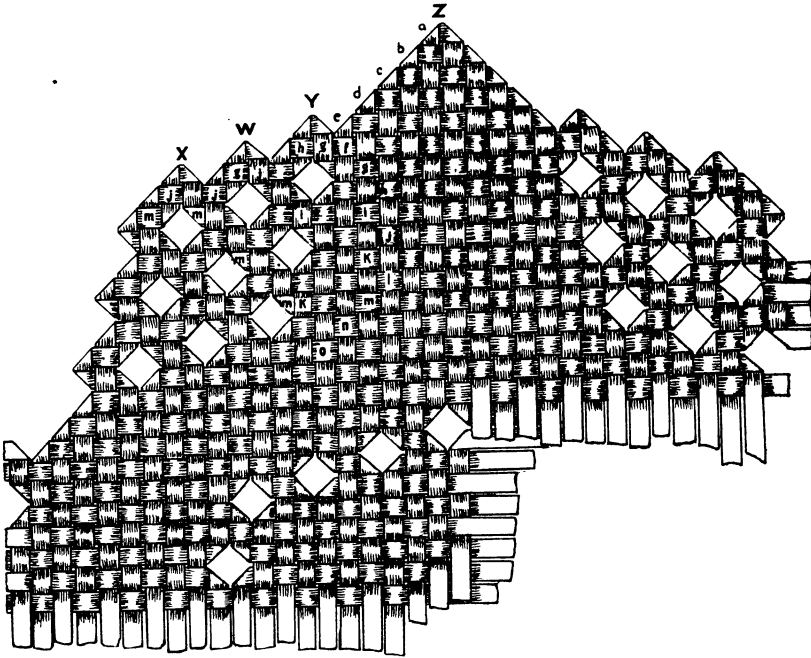


Plate XIV.

are turned in opposite directions. By following this plate it is easy to finish the weaves. If one straw is woven over another, it folds down before passing over, and, vice versa, if it passes under, it folds upward in turning.

As is seen, the holes are made simply by turning the straws in the weave. The different shaped holes in other designs (See plates) are made by turning a different number of straws according to the shape desired. Varied border edges may be made by switching the straws in any direction desired.

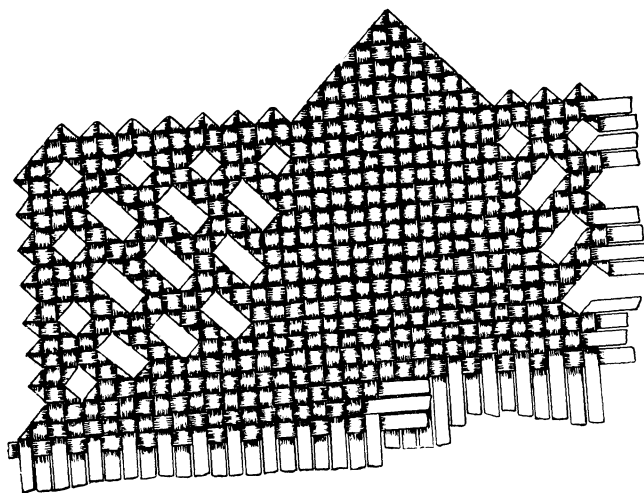


Fig. 1.

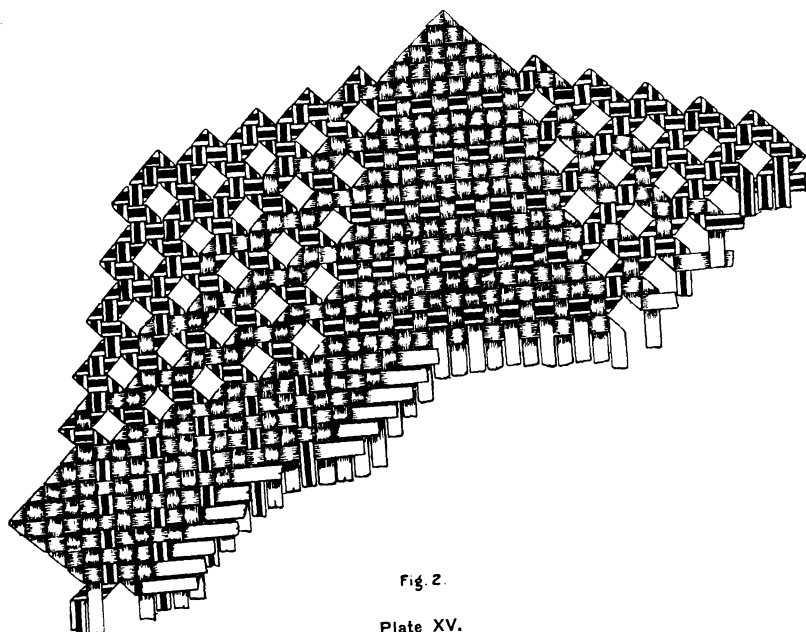


Fig. 2.

Plate XV.

INTRODUCING COLOR PANEL.

Step 1 of Plate XVI shows the first colored panel, straw *ab* placed between *cd*, the space between *x* and *y* having been already woven, as shown in step 11.

Step 2. Folding *a* to the right.

Step 3. Folding *a* under and down.

Step 4. Folding *c* over *a* and to left.

Step. 5. Folding *a* over *c* and upward.

Step 6. Folding *b* under *d* to left.

Step 7. Folding *b* upward, with right twist downward.

Step 8. Folding *d* downward, with right twist to right.

Step 9. Folding *b* under *d* upward.

Step 10. Shows addition of second straw *ef* woven to the right, where the same process of turning is gone through as illustrated in steps 6 to 9 inclusive. If weaving is to the left, steps 1 to 5 inclusive are repeated.

Step 11. Shows continued additions and weaving both to the right and left.

Step 12. Shows both edges of panel woven, the inside turnings being the same as those of the outer edge.

CIRCULAR MATS.

The circular mat is woven like the crown of a hat, with either the radiating center or a square center radiating at the four corners. In either case the weaver must be careful to add the proper number of straws so that the mat will be flat, and not cupped, or fluted. The cupping is caused by not adding a sufficient number and the fluting by adding too many.

In tightening the weaving, do not pull the added straws (Plate XIX, step 6, straw *x-x*) or holes will be made at the elbow. Instead, pull the longer straws that run through the center, thus making the entire weaving tight.

RADIATING CENTER.

Step 1. Begin by laying down, in pairs, *ab* and *cd* perpendicular to the body. Put *kl* under *ab* and over *cd*. Put *ij* over *ab* and under *cd*.

Step 2. Now put *ef* under *cd* and *ij*, and over *ab* and *kl*; then put *gh* over *cd* and *ij*, and under *kl* and *ab*. See that the two ends of all the straws are equidistant from the center crossing.

In step 3 the straws are changed from pairs to singles as follows: Bring *a* over *i*; *e* over *d*; *i* over *h*; *d* over *l*; *h* over *a*, and *l* over *e*.

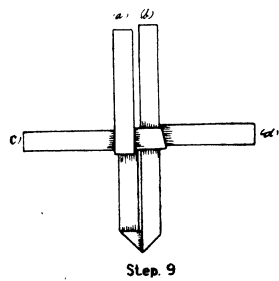
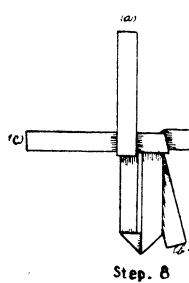
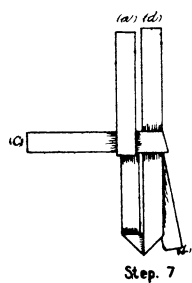
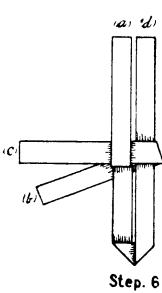
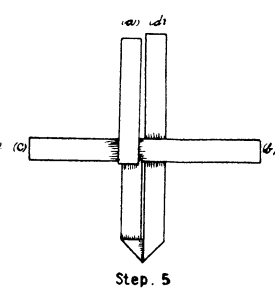
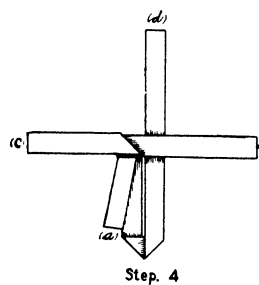
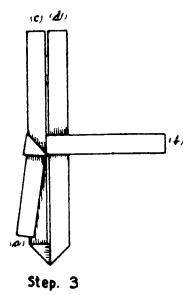
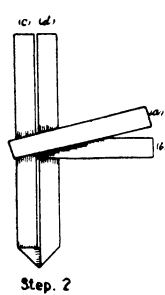
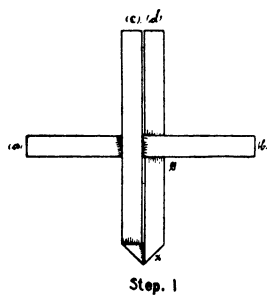
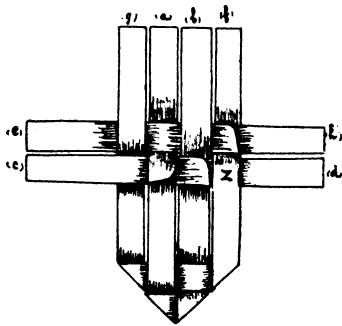
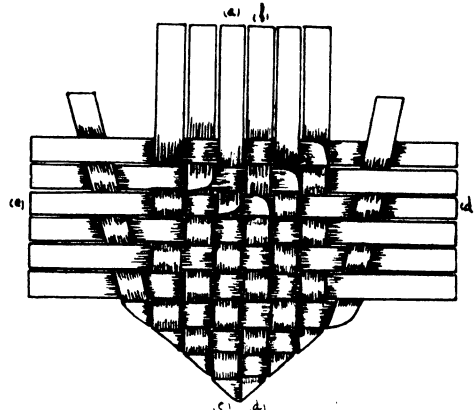


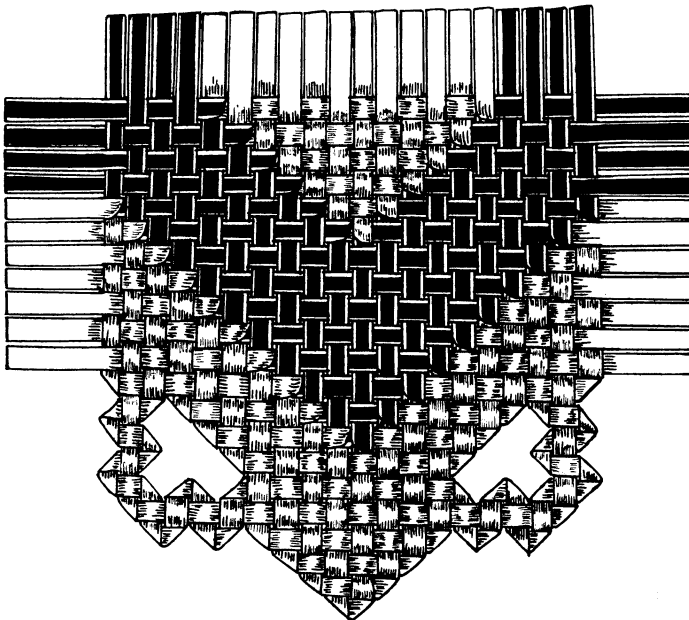
Plate XVI.



Step. 10



Step. 11



Step 12.

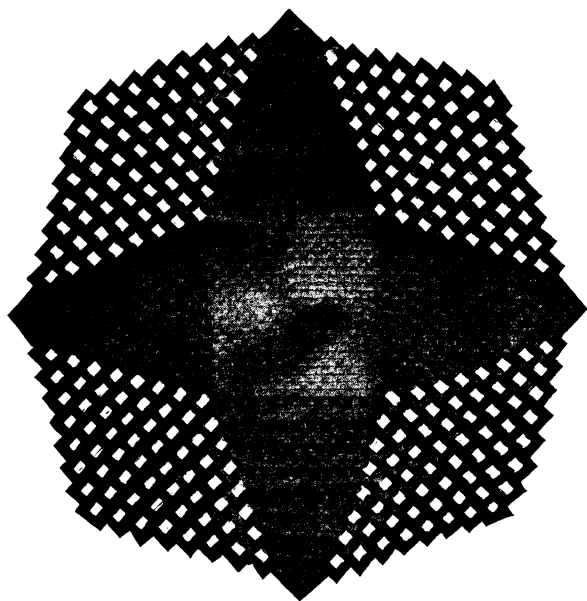


Fig. 1.

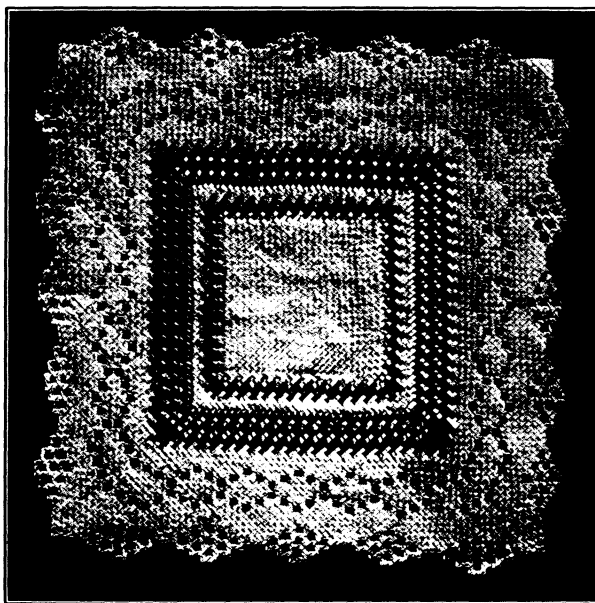


Fig. 2.

Plate XVIII. Romblon mat designs showing simple open weaves.

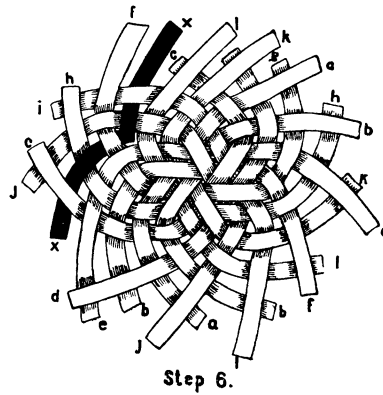
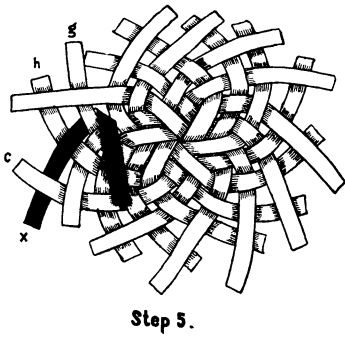
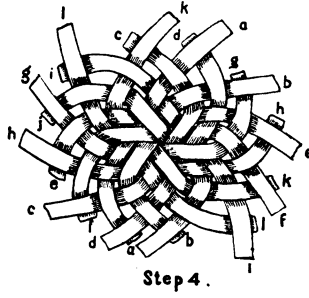
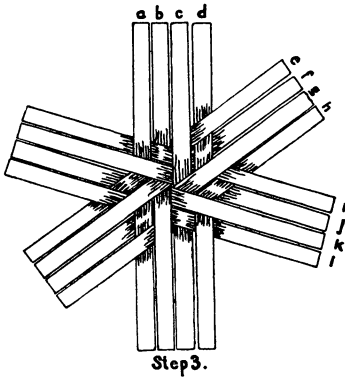
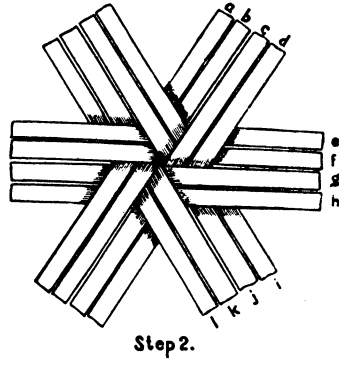
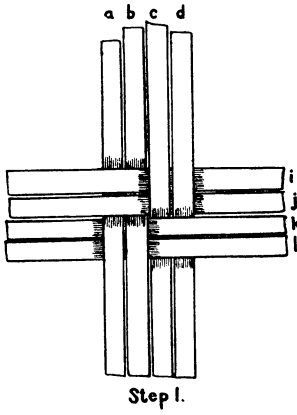
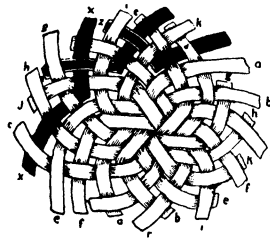
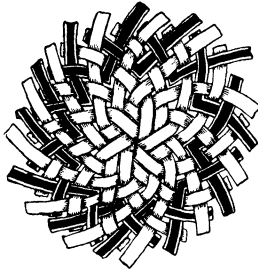


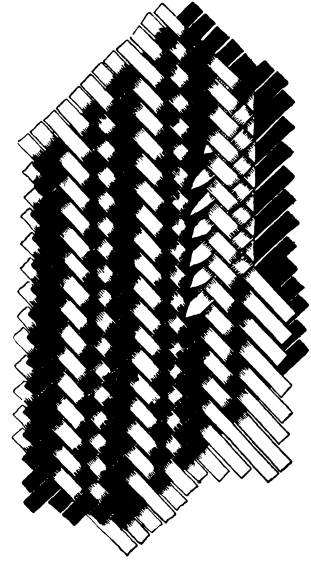
Plate XIX.



Step 7.

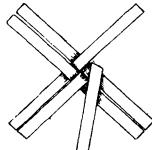


Step 8.

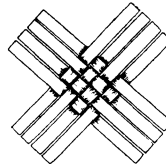


Step 9.

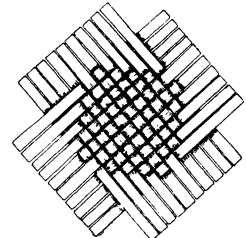
Plate XX.



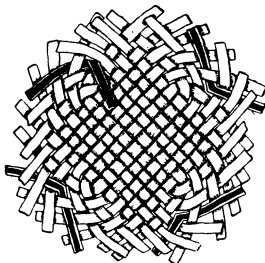
Step 1.



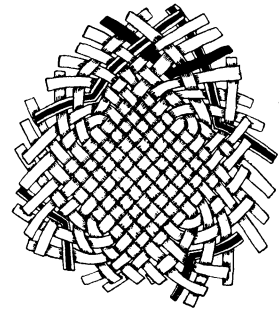
Step 2.



Step 3.



Step 4.



Step 5.

Plate XXI.

Step 4. The most convenient way to perform the next process is to take all the bottom straws in the left hand and allow the top straws to float over the closed first. Then the weaving is done with the right hand. However, for beginners the weaving may also be done on the table.

In weaving, place *c* under *b*, over *a* and under *k*; *d* over *b* and under *a*; *g* under *f*, over *e* and under *b*; *h* over *f* and under *e*; *k* under *j*, over *i* and under *f*; *l* over *j* and under *i*; *b* under *c*, over *d* and under *a*; *a* over *c* and under *d*; *f* under *g*, over *h* and under *c*; *e* over *g* and under *h*; *j* under *k*, over *l* and under *g*; *i* over *k* and under *l*; the round is then finished.

Step 5. This illustrates the manner of adding straws. Straw *X* is placed under *c*, over *h*, under *g* and then bent back. The bend should be in the middle of the straw.

Step 6. In this the right end of the added straw *x* is brought down over *j* and under *i*.

Step 7 shows how to continue the additions by weaving one straw and then adding one.

Step 8 shows the mat after the first round of additions has been completed. The weaving is now easy. Weave entirely around again without any additions, turning five straws each time. Then go around again weaving two and adding one, in the same manner as before, turning seven straws each time. As the diameter of the mat increases, the less often is it necessary to add. But be sure to add enough to keep the weaving close and the mat perfectly flat.

Step 9 shows how to close the edge of the mat by turning back the straws on each other. It also gives a very pretty "woven in" design for a border, which can easily be followed from the plate.

SQUARE CENTER.

Steps for commencing a circular mat with a square beginning are illustrated in Plate XXI. The additions at the corner are made in the same manner as explained in the radiating center, except that each is for a fourth of a circle instead of a complete circle.

DECORATIONS FOR ROUND MATS.

Decorations are often employed in round mats. (See Plates XXII and XXIII.) The most usual are concentric or radiating colored bands of either simple or sawali weaves.

HEXAGONAL WEAVE.

Step 1. In Plate XXII, place straws 1 and 2 parallel; then put 3 under 2 and over 1; put 4 under 1 and over 2.

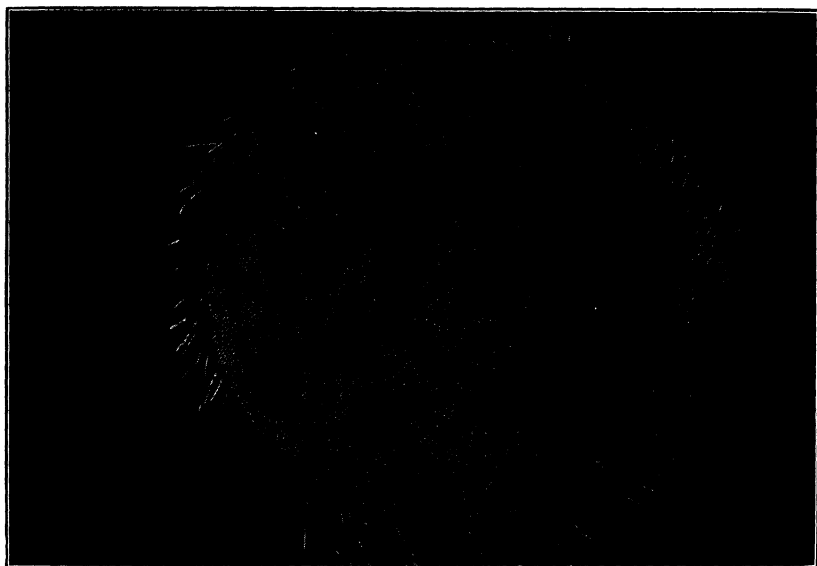


Plate XXII. Circular mat with radiating design.

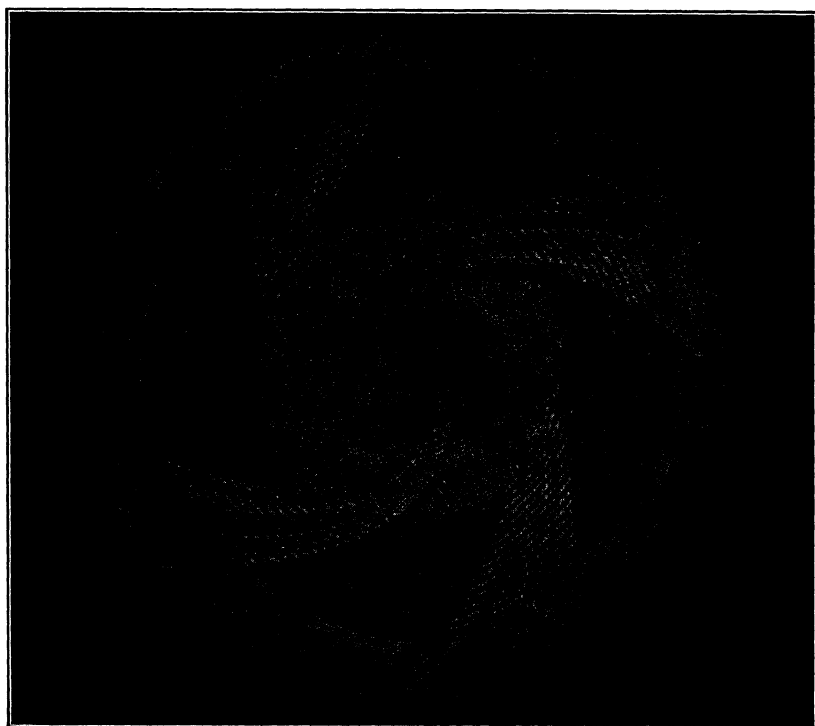
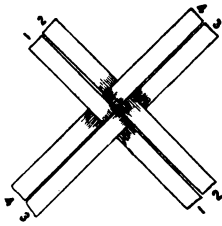
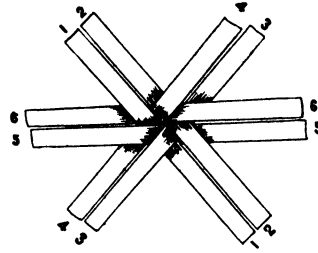


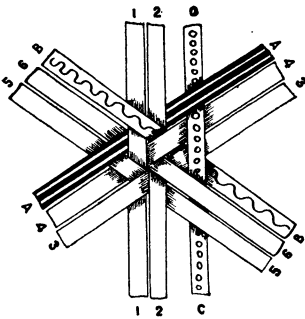
Plate XXIII. Circular mat with concentric and radiating design.



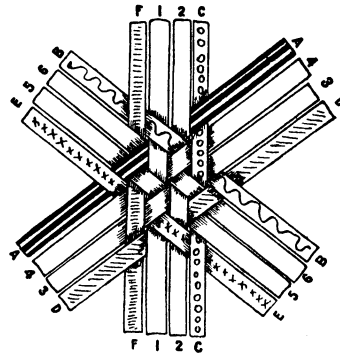
Step 1.



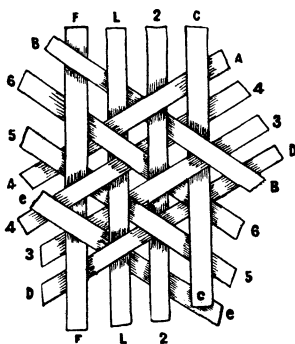
Step 2.



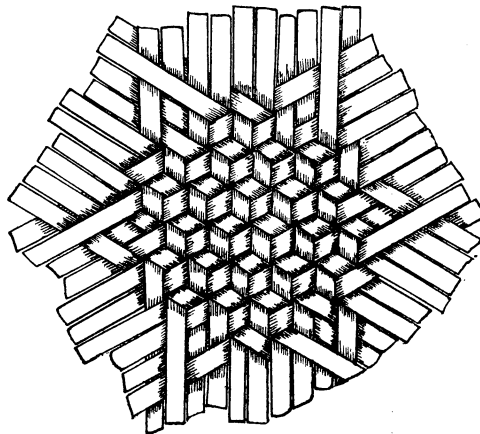
Step 3.



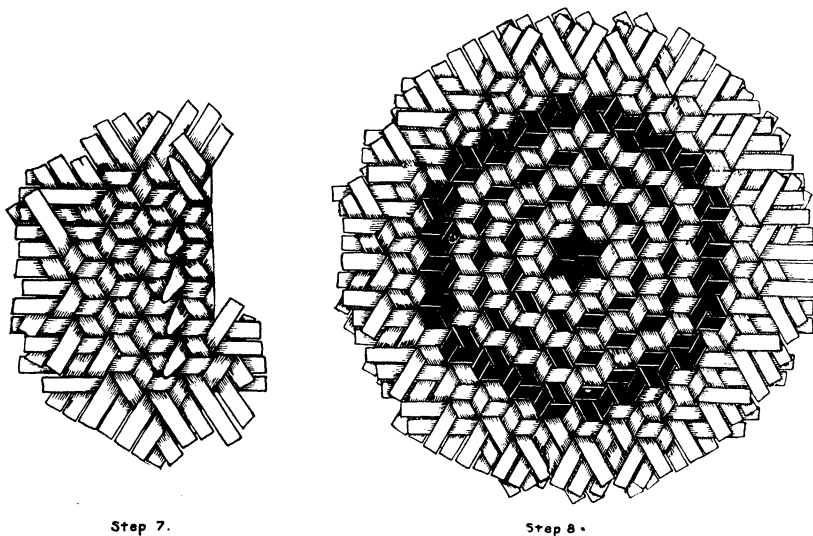
Step 4.



Step 5.



Step 6.



Step 7.

Step 8.

Plate XXV.

Step 2. Put 5 over 1 and 4 and under *a* and 3; put 6 under 1 and 4 and over 2 and 3.

Step 3. Put *a* over 5 and 6 and under 1 and 2. Put *b* over 1, 2 and *a* and under 3 and 4. Put *c* under *a*, over 4, 3, *b* and under 6, 5.

Step 4. Put *d* under *b* over 6, 5, *c*, and under 2, 1, *e*. Put *e* under *c* over 2, 1, *d*, under 3, 4 and over *a*. Put *f* under *d*, over 3, 4, *e*, under 5, 6, *a* and over *b*.

Step 5 is made open so as to show the triple over and under weave. Further weaving is merely a repetition of this process as shown in step 6.

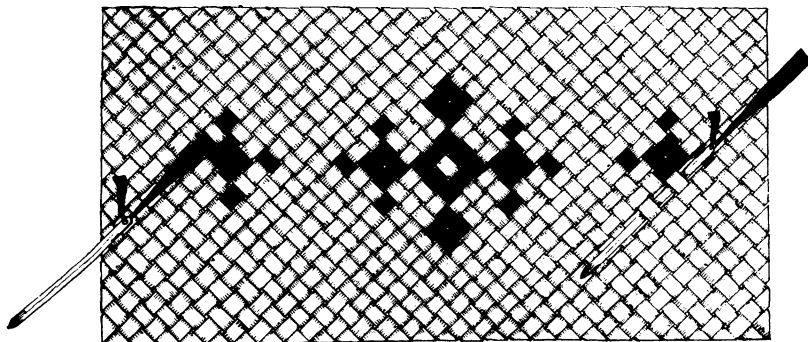


Plate XXVI.

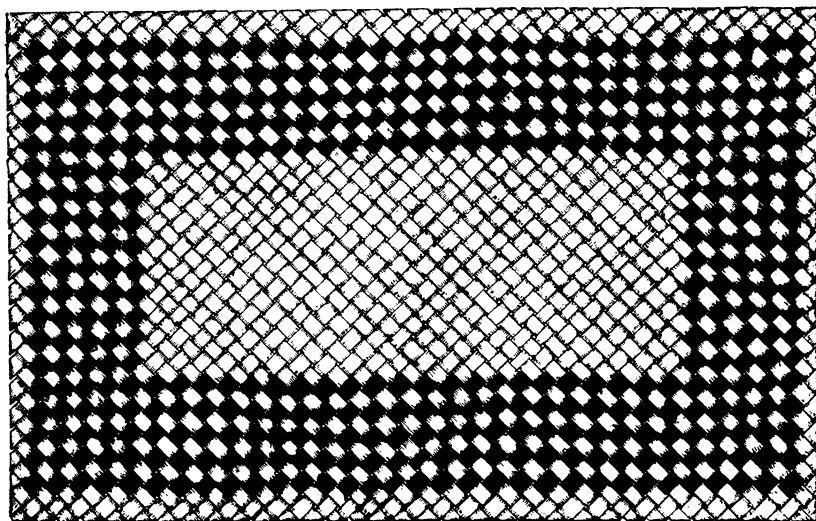
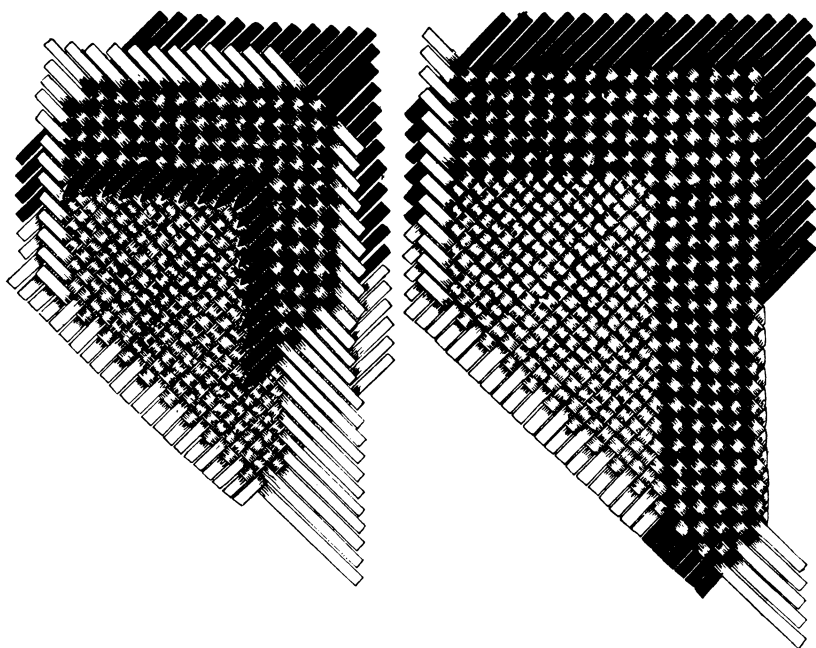


Plate XXVII.

Step 7 shows the turning of the straws on finishing the edge of the mat.

Step 8. Many designs can be made by inserting colored straws into the natural weave. Step 8 illustrates three of these embroidered designs—the star, the bar, and the diamond.

EMBROIDERED MATS.

The embroidering of mats is easily done and the method is shown in Plate XXVI. Mats in over and under weave, of solid color (either natural or dyed), are used, and the embroidery is done with colored straws. Plate XXVII illustrates an embroidered color panel. Floral, geometrical and conventionalized designs are discussed under the headings "Samar mats" and "Special designs."

MAT MATERIALS.

Many Philippine mat materials have been described in a former publication on hats.⁶ Only additional and new information is written here and such data from Bulletin 33 as are necessary to make a connected article.⁷

BURI STRAW.

THE BURI PALM.

There are about six species of the genus *Corypha* in tropical Asia, but only one of these is found in the Philippines; this is *Corypha elata*, the buri plam.⁸ It is widely distributed throughout the Philippines but is most abundant in the central part of the Pampanga valley and in southern Tayabas.

Mr. C. W. Franks, formerly Division Superintendent of Schools for Mindoro Province, had a careful estimate made by his teaching force of the stands of buri palms on the Island of Mindoro. It was found that 5,000 hectares of land on this

⁶ Bulletin No. 33 of the Bureau of Education, entitled "Philippine Hats."

⁷ This office is indebted to Mr. E. D. Merrill, Botanist, Bureau of Science, Manila, P. I., for placing at its disposal an unpublished manuscript on the Flora of Manila. Information from the following sources is also acknowledged:

Engler and Prantl: Das Pflanzenreich.

Hooker's Flora of British India, 1894.

Blanco's Flora de Filipinas, 1877.

The sugar and alcohol produced by the palms are discussed by Dr. H. D. Gibbs in the Journal of Science, Manila, Vol. VI, Sec. A, No. 3. Hats are also discussed by Mr. C. B. Robinson in the same Journal, Vol. VI, Sec. C, No. 2.

⁸ Buri (in most localities), buli or búle, silag, ebus.

island are covered by 2,000,000 buri palms, of which 225,000 or about 12 per cent are mature trees.

The Island of Burias, the Isla Verde, and other small islands are fairly covered with the palm. The Province of Sorsogon, including the Island of Masbate, is also well supplied. In the Visayas there are districts in Panay, Negros, Cebu, and Bohol, where many buri trees are found.

The buri is the largest palm that grows in the Philippines, attaining a height of 20 meters. Its trunk is very erect, spirally ridged and up to 0.7 meter in diameter. Its wood is of no commercial value.

The full grown leaves may be three meters long. They are spherical in outline and the lower one-third or one-half is entire, like the palm of the hand. The upper part is divided into from 80 to 100 segments each from 1.5 to 6 cm. wide and appearing like fingers spread apart. The petioles supporting the leaves are about 3 meters long and 20 cm. thick, and are provided with long, stout, curved spines. Both margins and spines are black in color. At flowering

time all the leaves are shed. The young leaf grows out from the top of the palm with the segments pressed together in the form of a lance.

The buri flowers and fruits but once and then dies. This is said to occur when the plant is from 25 to 40 years old. The individual flowers are greenish-white in color and only from 5 to 6 mm. in diameter. They are nevertheless perfect flowers, with calyx, corolla and ovary showing plainly a division into threes, and stamens six in number. Thousands of these flowers occur on the large, terminal, much branched, pyramidal inflores-

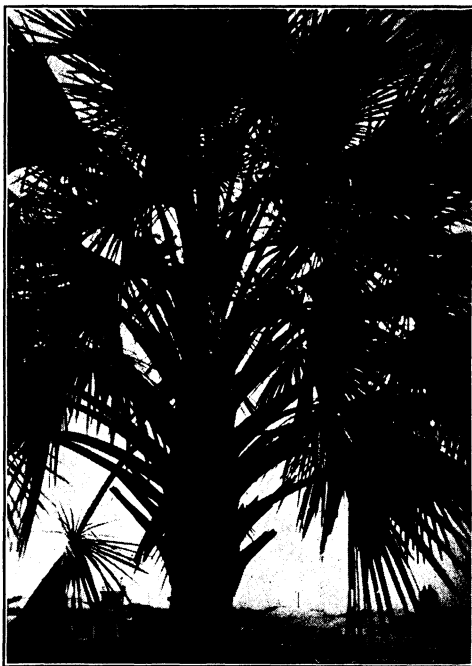


Plate XXVIII. Foliage of the buri palm.

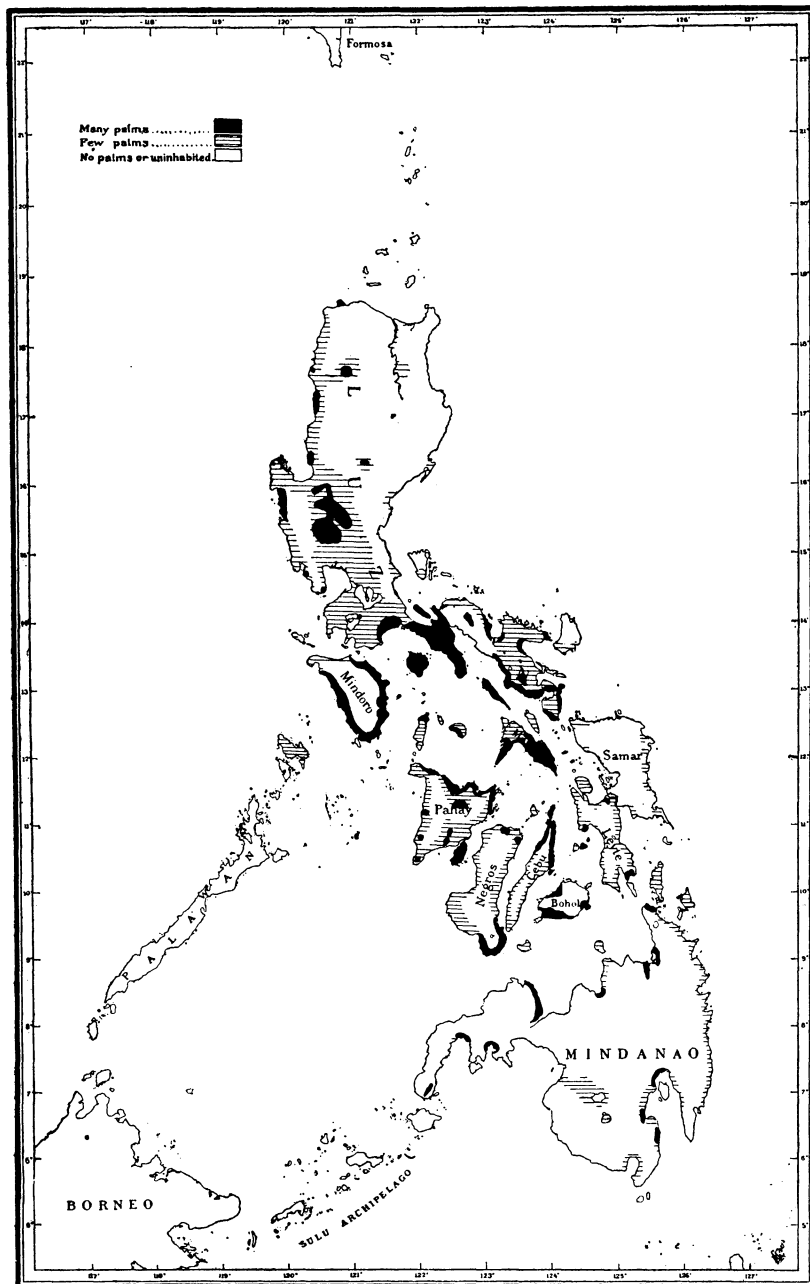


Plate XXIX. Distribution of the Buri Palm.

cence which may grow to be 7 meters in height. The lower branches of this inflorescence may be as much as 3.5 meters long, the upper shorter, the highest about one meter in length.

From 10 to 12 months after flowering the fruits are mature. They are from 2 to 2.5 cm. in diameter and each contains an extremely hard seed 1.5 cm. in diameter.

PREPARATION.

Buri straw is prepared from the young, unopened leaf of the buri palm. The coarsest straw is made by separating the leaflets from the midribs and drying them in the sun. A higher grade straw results from boiling them in water. Such straws are suitable only for bayon manufacture and to be woven into coarse mats for baling purposes.

Several methods of bleaching buri straw obtain in various localities. Any exact description of the processes is somewhat difficult, since the persons who produce the straw have no very definite idea of the proportions and quantities of various materials which they use, and often do not care to divulge what they consider trade secrets. In several cases, nevertheless, supervising teachers have succeeded in obtaining fairly exact data on the preparation of buri straw.

However, the same method carried out in different towns seems to result in different qualities of straw. These differences probably result from slight variations in the method of preparation. It has also been found that the age of the leaf, as determined by the length of the stem (petiole), influences the color of the straw produced. In some districts the unopened leaf is not taken if the stem is over two inches in length. In other places, leaves with stems about one foot high are considered ready to cut. It is probable, too, that the composition of the water in which the straw is boiled influences its color. Mauban, in Tayabas province, has the reputation of producing the whitest buri straw. Mr. John H. Finnigan, supervising teacher, attempted to introduce buri straw into the schools of Gumaca, Tayabas, where the buri palm is very plentiful. The work was in charge of expert weavers from Mauban, but only a poor quality of straw was produced. It was claimed that the water in which the segments were boiled, according to the process which is explained later, did not whiten them. It is a fact that in Mauban the water of the town fountain is used to produce the fine white straw. In the several years of his experience, Mr. Finnigan found no place outside of Mauban which produces straw equal in color to the Mauban straw, but he has noted that

the second best straw comes from San Fernando, Gumaca, where there is an especially clear stream of water.

In fact, all reports would seem to indicate that clear, pure water is essential to the production of the finest white buri straw, and only such should be used in all processes of the various methods outlined here.



Plate XXX. Unopened buri leaves.

The Arayat Process.—

Mr. Robert Clauson, supervising teacher, has determined the process of whitening buri straw in Arayat, Pampanga, as follows: The segments are separated from the midrib and rolled rather loosely, so that the water may pass between them, in bundles as large around as a plate. These are placed in a large can or vat containing tamarind leaves and alum (see bleaching agents) in water, and the whole is boiled until about one-half of the water has evaporated. During the boiling the buri must be tightly covered with tamarind leaves and not be allowed to project from the water. After this process the rolls are placed in a jar full of clear water and left to

soak for three days. The strips are then washed several times in the river during a period of three days, and they are then laid on the grass or along fences to dry after each washing. The oftener they are alternately washed and dried the whiter and tougher will the material be. After the final drying, which should be thorough, the strips are rolled very tightly into bundles.

The San Luis Method.—The method of whitening buri straw followed in San Luis, Pampanga, is described by Mr. James H.

Bass, supervising teacher. The unopened leaves are brought down the Chico River in rafts. The segments are torn from the midrib and boiled for four hours in five gallons of water to which one liter of nipa vinegar, a lump of alum the size of an egg, a handful of tamarind leaves and a handful of pandakaki leaves (see bleaching agents) have been added. Other steps follow as in the previous process.

The Mauban Process.—The following description is taken from Circular No. 27, series 1911, of the Division of Tayabas. Let the unopened leaves, cut from the stalk, stand in a cool shady place several days, until the sap has well run. Open the leaves and separate the segments from the midrib with a sharp knife. Put these carefully into a petroleum can or other suitable receptacle filled with a boiling solution of two-thirds water and one-third white nipa or coconut tubá vinegar (see bleaching agents). Keep the solution boiling until the segments are cooked, so soft that folding them leaves no crease.

Spread the cooked leaves on clean grass in the sun to dry. The drying process may require one or two days. When the segments are quite dry, prepare a jar with clear soft water, and put them in this to soak over night. In the morning remove them from the jar, wash them thoroughly in clear running soft water and place them in the sun. At noon repeat the washing process until the segments open, then dry thoroughly in the sun.

It is customary to roll the buri into coils in order to make it more convenient to store. The dry leaflets may be made flexible for this purpose by laying them on the grass in the night air. After a few minutes they will be flexible enough to roll. Care must be taken to have the segments smoothly rolled. When used, they should be smoothed carefully and then split into the widths required.

The process can also be followed with rice vinegar (see bleaching agents) substituted for the tubá vinegar.

Wash two chupas of rice and cook it in water until it becomes very soft and starchy. Put this in a clean petroleum can and add cold water until the can is two-thirds full, then cover the can and let it stand five or six days. This mixture will become very sour. Strain it through a piece of sinamay or other cloth. Cook the segments in this mixture instead of in the solution described in the first process, and then carry out all the other steps.

The Romblon Process.—In Romblon, great care is exercised

as to the age of the unopened leaf taken for the production of straw. If it is intended to produce bleached straw, stalks having stems about two inches long are selected. In the following description, which was submitted by Mr. R. L. Barron, head teacher, one unopened leaf is taken as a unit. The midribs are removed and the segments are rolled into round bundles, say by fives. These are boiled in clear water for about three hours. The leaves are then placed in a mixture of half a liter of tuba vinegar (or three liters of vinegar made from cooked rice, or one-fourth liter of lemon juice) to which enough water has been added to cover the rolls of buri, and boiled for about five hours. The material is then spread in the sun for three days to dry, care being taken that it is not exposed to rain or dew. The segments are then placed in cool clear water for twelve hours and again placed out in the sun for two days to dry.

THE DYEING OF BURi STRAW.

Buri straw intended for mats is usually colored with the cheap imported coal tar dyes previously noted. It is expected that the new dyes for which the Bureau of Education has arranged will take the place of these. Romblon buri mats, which are the finest in point of workmanship and design made in the Philippines, are colored entirely by local vegetable dyes.

The methods used in the island of Romblon in dyeing buri straw have been carefully investigated by Mr. Barron, and are presented herewith. In each case the unit of material is one stalk of buri for each color. The process of whitening Romblon buri straw has already been described.

For red, unopened leaves having stems three feet long should be selected. The midribs are removed while green, and the leaves are rolled into bundles of convenient size, say by fives. These are boiled in clear water for about three hours, after which the segments are spread in the sun for three days to dry. Care should be taken that they are not exposed to rain or dew. They are then placed in a fluid made by boiling two gantas of kolis leaves (see mordants) in plain water for one hour. The buri leaves remain in the water and soak thus for three days and three nights. The buri leaflets are then placed in a vessel containing two gantas of sappan wood (see dyes), one-half liter of lime water and one chupa of tobacco leaves. To this a sufficient quantity of plain water is added to thoroughly submerge the buri, and the whole is boiled for eight hours, being mixed at short intervals to obtain a uniform shade of red. The seg-

ments are then removed and hung in the wind for about six hours to dry after which they are smoothed and rolled.

For yellow-orange, unopened leaves having stems about two inches long are selected and the segments are removed from the midribs and rolled into bundles. These are boiled in clear water for about three hours and spread in the sun for three days to dry, care being taken that the buri is not exposed to rain or dew. The material is then placed in a vessel containing one ganta of powdered turmeric (see dyes), one chupa of powdered annatto seeds (see dyes), one liter of lime water, and sufficient clear water to cover the buri, and is boiled in this mixture for five hours, with frequent stirring. It is then removed and hung in the wind for one-half day to dry, and is smoothed and rolled.

For green, an unopened leaf having a stem about two inches in length is selected. The segments are removed from the midribs, rolled into bundles and boiled in clear water for about three hours. After this, they are boiled in lye (consisting of ashes) for about two hours, the mixture of ashes and water covering the buri during the process. The bundles are then removed from the vessel, wrapped in a bayon, and put in a dark place for 48 hours. The segments are then taken out and hung in the wind for about three hours to dry, and are smoothed and rolled.

The preliminary steps in the production of "black straw" (a cold dark gray) are the same in the making of the green material. The segments taken from the bayon, as described above, are buried three days in black mud, in a rice paddy, for instance. The material is then washed in plain water until clean, and is then boiled for two hours in a mixture of one-half ganta each of the leaves of talisay, indigo, and tiagkot (see dyes), with a sufficient quantity of water to cover the mixture. The whole should be stirred at frequent intervals. After two hours the strips are removed and hung in the wind for five hours to dry. Then they are smoothed and rolled.

TYPES OF BURI MATS.

The Bontoc Peninsula of Tayabas produces great quantities of baling mats and bayons. Bayons are also produced in large quantities in Capiz province. Other localities are of less importance.

Buri sleeping mats are made from the northernmost part of Luzon, in the Bangui Peninsula, to the Sulu Archipelago. For the most part they are woven in small numbers here and there,

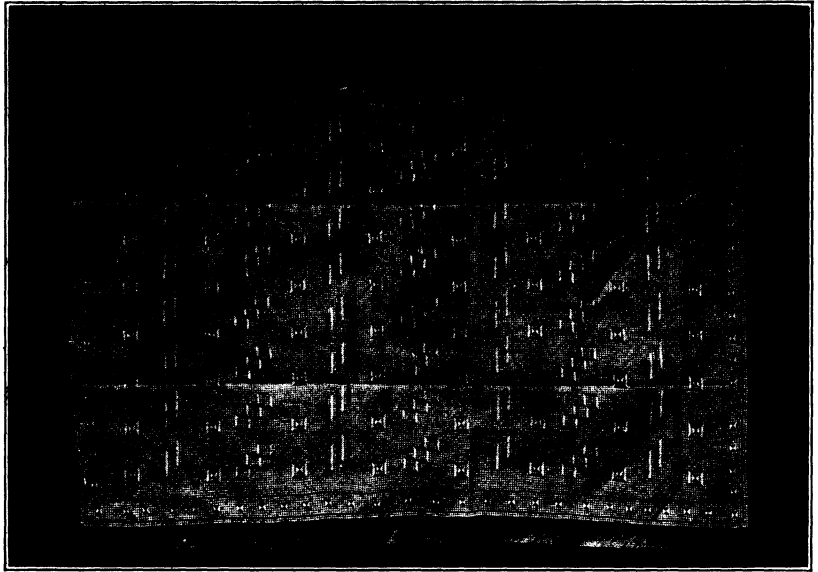


Plate XXXI. Fair grade Romblon mat.

in the different towns, sometimes for use in the household in which they are made, often for local trade in the barrios or municipalities. In nearly every province there is at least one town in which the production of buri mats reaches provincial commercial importance. A number of municipalities produce

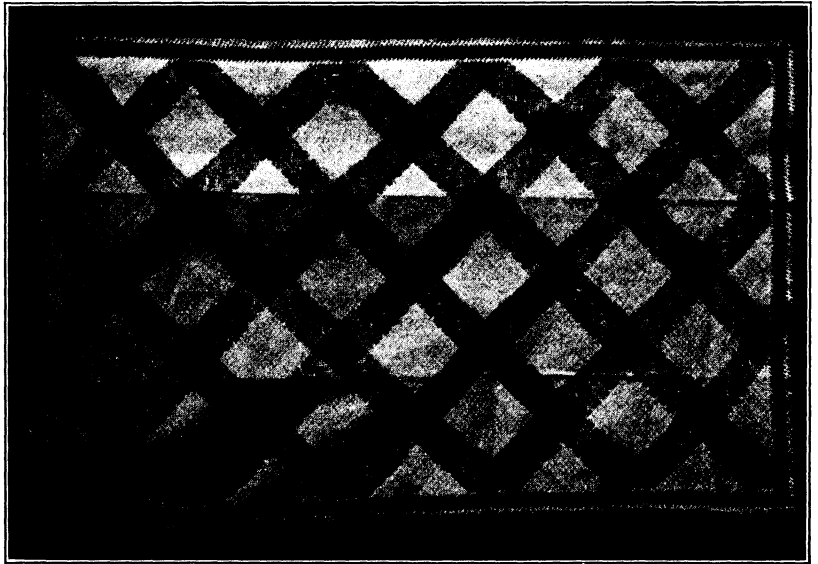


Plate XXXII. Medium Romblon mat.

them for a fairly extensive trade with neighboring provinces. In most cases these are ordinary products, usually decorated with a few colors in lines or checks of dyed straws, either woven in or embroidered on the mat.

In one region, however, buri mats have reached such a degree of perfection in their weaving and decoration as to have become a distinctive product known throughout the Islands. These are the Romblon buri mats, and they are produced throughout the islands of Romblon. Their central market is the town of the same name. They are distinctive because of the fine white and colored materials used, and of the designs which are woven in

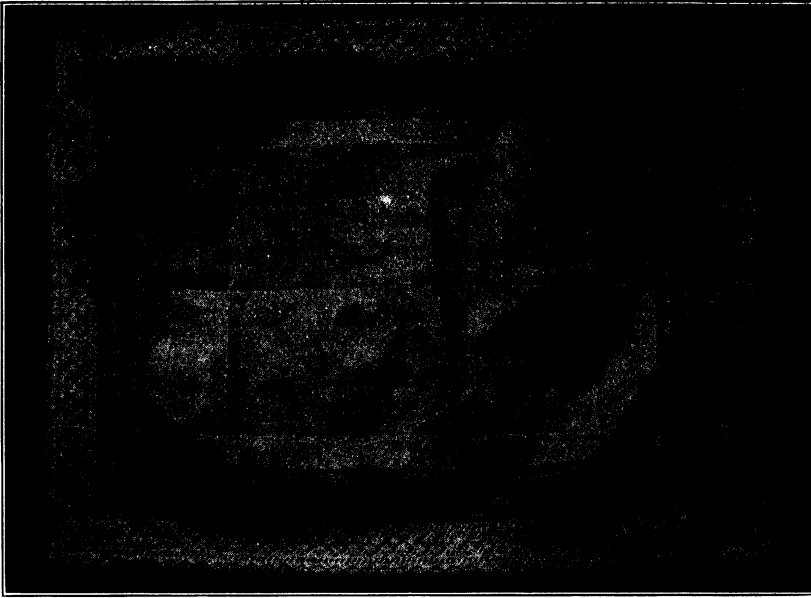


Plate XXXIII. High grade Romblon mat.

them. In the designing not only checks and line borders but also plaids appear, and many of the effects produced by floating straws are employed. The Romblon mat, moreover, is most noticeable because of the fancy weave, making a sort of open work along the border, for which these mats are unique. Romblon exports great quantities of mats varying in price from ₱0.25, to over ₱10, and in size from small mats for stands to large decorative mats which cover the sides of rooms.⁹

NOTE.—This paper on mats will be continued in the October and November numbers of the CRAFTSMAN.

⁹ It is probable that some of the double Moro mats which will be described under the heading "Pandan Straws" are woven from buri straw.

TRADE SCHOOL PROBLEMS.

W. W. MARQUARDT, Superintendent, Philippine School of Arts and Trades.

TO outsiders, trade schools may seem dull and prosaic institutions; but in the whole educational field of to-day there is no one problem that presents so many diverse phases, that has so many proposed solutions, or that so leads to the very heart of the present demand that our schools must train for efficiency, as that of vocational training. Trade school problems vary not only for different countries, but also for different sections of the same country. A trade school in the United States can not duplicate the workings of the best school in Germany and be assured of success. None of our schools in the Philippines can make a close copy of the best school in the United States and expect thereby the maximum of efficiency. Ideas may be adopted from other countries and then adapted to local conditions with a great measure of success, but many distinctive features must be worked out independently in each locality.

In this article it is not proposed to elaborate any one of the many vexed points of discussion, but simply to marshal in review some of the problems which must be solved before a trade school can rightfully be considered successful. This review will, it is hoped, be of interest even to those who are not directly connected with trade work, as it may present some familiar phases in a new light and may direct attention to others which have not hitherto been carefully considered.

The proper housing of the school and the selection of competent teachers will not be touched upon at present, as each is a complicated problem in itself. It will be assumed, also, that the relative merits of the old system of education which trained for culture alone and of the newer education which trains for efficiency have been passed upon and decided in favor of the latter. But even though efficiency is to be our watchword, can we afford to neglect culture altogether? Can we depend wholly upon shop work and drawing to develop the pupil's mind, to inculcate the principles of honesty and morality, to arouse the latent sense of social and civic responsibilities, and to teach the necessity of service? If shop work and drawing alone are not

sufficient to inspire these results, what academic subjects must be added to the course to increase not only its cultural value, but also its efficiency?

English, mathematics, and science will doubtless be agreed upon as the essential academic subjects to be taught. Having decided upon the essentials, however, our troubles just begin. Shall we worry our pupils by distinguishing between the object and objective complement, deciding whether there is or is not a potential mode, whether "laughing" is a participle or an adjective, *ad infinitum et ad nauseam*? Or can we teach them how to speak and write English correctly without all of this highly favored technical stuff? Shall we have them write essays on "A Beautiful Morning" or learn to answer advertisements in a businesslike manner? In reading, shall we limit them to classical English and instill romanticism into pupils already surcharged therewith? Or shall we show them that there is a literature connected with mechanical trades, teach them how to read and understand newspaper and magazine articles, and give them inspirational reading such as is found in "Captains of Industry," a set of biographies of Franklin, Greeley, and the like? Physics, elementary mechanics, and chemistry are fairly easily selected as proper science subjects, but can we be satisfied with the current methods of teaching physics so that the pupil is well versed in respect to absolute zero but has never witnessed the manufacture of ice? Of teaching chemistry so that the girl student can talk glibly of radium but knows nothing about the action of baking powder? And of teaching mechanics so that the boy can calculate to the foot-pound the force of compact of a projectile but does not understand why a mallet instead of a hammer should be used on a carpenter's chisel? In mathematics, shall we continue teaching tables of weights and measures that we do not use once in a lifetime? Shall we give instruction in cube root and recurrent fractions? Shall we have our pupils memorize the metric tables and solve problems therein while at the same time they cannot estimate the size or weight of a box within fifty per cent unless provided with a rule and scale? Or shall we not only drill our pupils in problems that will arise continually in their life work but also teach them so that they will at least recognize a meter stick when they see it?

Further we have the question as to how much civics and hygiene and sanitation can be introduced. We agree that they should be taught, but how much time can we devote to them if we are to teach a boy a trade in four years? Still further on,

we run up against geography and history, which we cannot possibly squeeze into an already crowded curriculum. Here we shall probably have to content ourselves with teaching English in such a fashion that our graduates will have acquired a reading habit before leaving school and will have learned where to look for and how to find information on special subjects. We shall have to console ourselves with the thought that unless they actually learn to read, they will forget whatever of history and advanced geography may have been crammed into them as soon as their examinations are over, and thus will not miss much anyway.

Then there is the question of drawing. Shall we be satisfied to have a visitor come to our schools and report, as one did recently upon a domestic science school in Germany, that "he found the girls in the drawing department with a good knowledge of conventionalized borders but with absolutely no practice in drawing patterns for use in dressmaking?" Shall we teach a lot of geometrical drawing to pupils whose mathematical attainments make it impossible for them to grasp the more difficult of the theoretical problems, or shall we teach practical geometry applied to shop work and lay emphasis upon the making and interpreting of drawings such as are required in actual work? Shall we compel them to spend a lot of time in making a few fine-looking plates for display purposes, or shall we have them learn how to make quick freehand sketches with accurate measurements indicated? In our attempts at correlating the shop and drafting room, shall we insist upon every job originating in the drawing room and not allow a pupil to make an object until he has first made his working drawing, or shall we recognize the fact that the average workman knows but little about drawings and is unable to learn much more? In other words, shall we devote our whole time to boys who ought to become foremen or shall we also take care of the mediocre pupils whom we can promote from poor muchachos or common laborers to ordinary workmen even though we can not hope to make foremen out of them in a hundred years?

When we drop the consideration of the problems related to drawing and academic subjects and take up those pertaining to the shop, we find ourselves in still deeper water and must strike out for ourselves if we would reach a safe landing. The first choice we must make is that between commercial work and exercise work. Is it wise to plan a carefully graded system of shop exercises and adhere thereto, or should our pupils learn to

do by doing and confine their work to objects of utility from the very beginning? Or is there a golden mean between these two extremes, namely, the use in the beginning of carefully selected exercises of which the great majority are in themselves of a practical nature and then the gradual introduction of commercial work? If we decide in favor of commercial work, how shall we avoid arousing the opposition of outsiders engaged in the same line of business? How shall we prevent the exploitation of the boys in the effort to make a good financial showing for the school? Shall we have a boy make one object of a kind and consider his training on that object completed or shall we have him make a hundred or more of the same kind, ostensibly in order to give him assurance and speed but principally to swell our receipts and make a better showing in the annual report? Or is there here again a golden mean of keeping him at one particular line of work until he acquires a satisfactory degree of speed and accuracy and then passing him on regardless of financial return to the school?

In the management of the shop shall we use the day or piece system? Shall we insist, above all, upon the highest grade of work regardless of time and obtain the result rather easily through the use of the day or time system, or shall we use the piece or contract system and thus make impressive the value of time at the expense of eternal vigilance on the part of the instructor to see that no slipshod work is done? How far shall the instructor give assistance? Shall the boy be compelled practically to fight his battles alone, all along the line, or shall the instructor lay out the materials and do the finer parts of the job himself?

In the use of machinery, where shall we draw the line? The stranger walks into the blacksmith shop and says, "I see there is a steam hammer. Do the boys have steam hammers in the provinces from which they come?" He is told that the pupils must learn to swing a sledge before being allowed to use the hammer. He next visits the pottery department and asks, "Why are the potter's wheels run by hand and not by electricity"? Perhaps he will be satisfied with a reply to the effect that the use of even hand wheels is a great advance over the ordinary provincial methods of making pottery.

In the care and use of hand tools, there are questions to answer. Can a pupil be depended upon to pick up the sharpening of saws during his course, or must a definite time be set apart for such instruction? Should a tool keeper be hired and made

responsible for the tools, or should the pupils alternate in getting experience as tool-room keepers with the necessary accompanying loss of some tools and the corresponding complications with the Auditor's Office? Or should each pupil have a set of tools for his own use, thus making him personally responsible for their care and proper preservation?

What attitude should be taken in respect to the usual student activities? If we have a library, should it be devoted wholly to the trades and allied subjects or should it have in addition some good wholesome fiction that is easy to read and is sure to increase the vocabulary of the reader? Do the trade school boys get enough exercise in their shop work or do they need the usual baseball, volley ball, and group games? Should we observe the usual school hours or should we lengthen out our daily program so as gradually to accustom the pupils to the longer hours of the commercial world? Should we encourage school societies and thus lay perhaps dangerous stress upon political activities that need no encouragement from us and that may tend to wean the members away from the trades? If we have long hours, does it become incumbent upon us to see that the pupils are properly fed at noon or should we leave that to the vender of candy, bananas, and sorbete?

Over and above all these questions are still more important ones. How are we to select our pupils? What assurance have we that they actually desire to learn a trade and have any intentions of following it when they get through? Will written statements from themselves or their parents help solve this question? After having been admitted to the school, what is to be done with the pupil who is proficient in academic subjects and poor in shop work, with the more unusual one who is good in the shop but impossible in the class room or, finally, with the one poor in both? The last case may be disposed of by elimination, but have we solved the problem if we send the poor shop student to another school and thus deprive him of developing the weakest part of his nature? Have we done our full duty if we give nothing but shop work to the boy who cannot get much out of his books but who possesses a mechanical turn of mind? And how are we to know whether a boy has a bent toward ironwork or woodwork? Can we afford to give two years' preparatory work consisting of a half year in each shop so that he and his teachers may judge as to what work he is best fitted? And if we can afford to do this, can the pupil afford to have his trade course lengthened out two more years?

Is it up to us to make a definite study of the various shops in our locality so that we can advise a prospective tradesman of the nature of the trade he is planning to learn, the opportunities offered in that line, and the natural qualities required for its successful mastery?

And after we have given him vocational guidance before entering school and have given him the best we can offer during his training, do our duties cease or are we responsible in part or in whole for the way he spends his vacations and the manner in which he gets located upon graduation? Do our duties as teachers include the management of an outing system whereby students may secure employment at their trades during their long vacations? Must we manage an employment bureau so as to assist our graduates in getting settled in their life work? Must we go even further and keep in touch with all of our graduates for the mutual benefit of both graduates and school?

Such are but a few of the problems confronting those to whom is intrusted the successful building up of a trade school. Scores of minor difficulties will arise in the attempts at the solution of each of the problems enumerated above. Patience in investigation, closeness of observation, soundness of judgment, and independence of action are the necessary attributes of those who hope to cope successfully with these problems. The great opportunities for service and the delight of entering new fields are sufficient incentives for throwing one's heart and soul into the work. The personal satisfaction that comes from service rendered and work well done is ample reward for the dedication of one's whole energy to the practical solution of these problems.

"The development of skill has as its first object the development of a man's own joy in work and thereby of his joy in life."

"The child enters into the industrial commercial activity and the life of the world through his hands and his brain. He has very little interest, in general, in things outside his immediate environment, until that interest is stimulated through the work of his hands. To illustrate: Work in wood means images of woodwork, realization of images, interest in all things made of wood, from the simple box to the magnificent structure. The child can not make an article of furniture without always being more or less interested in furniture."—Colonel FRANCIS W. PARKER.

THE CORN CAMPAIGN.

NORTH H. FOREMAN, Inspector of School Gardens and Sites.

THE Bureau of Education has for years been interested in making available a better and more wholesome food supply for the people. In past years this has been confined to the extension of vegetable growing by means of school and home gardens, and to the operation of both school and settlement farms largely devoted to the cultivation of farm crops. The garden work has been extended until the reports for the past year show that two thousand five hundred seventy schools maintained successful gardens, and that twenty-two thousand nine hundred fifty-seven home gardens were cultivated by school pupils. Each of these home gardens was in reality a small, well-supervised demonstration field.

The extent to which gardening has bettered the economic conditions is best shown in the report of produce raised. Produce to the value of almost fifty thousand pesos (₱49,425.50) was grown in the gardens. In itself this represents bettered food conditions, without any consideration of the countless benefits which accompany work of this nature. In addition to the school gardens, some forty farming courses were offered in the schools.

This year special attention is being given to the development of one of the food staples by inaugurating a general corn campaign which will reach every school in the Philippines. Thousands of plots of corn will be grown and the essential points of good corn and improved methods of cultivation will be taught to each corn grower. Demonstrations in the preparation and cooking of corn will be given and recipes will be distributed in such number that the importance of corn as a human food will be known in even the remotest community.

The need for such a movement is shown by the statistics of last year's corn production in the Philippines. The fact that 300,000 hectares (750,000 acres) of corn were cultivated, with an average yield of only 8 cavanos (17 bushels) per hectare ($2\frac{1}{2}$ acres) as compared with the average yield of 30 cavanos in the United States, shows the need of attention to this food staple. The campaign as launched is quite extensive. It embodies lessons on corn production, demonstrations in the uses



A crowd about school building, Malabon, Rizal, at the Corn Demonstration.

of corn, and many other points involved in the popularization of corn foods. By means of the extensive organization of teachers who are in close touch with the daily life of the people the success of such a campaign can be assured. Every member of the force of some eight thousand teachers is actively enlisted, and, in addition, the coöperation of other bureaus is assured.

CONFERENCE.

The corn campaign was opened by the Acting Director when the following persons were gathered for a conference upon the subject: The Second Assistant Director; Division Superintendents of Schools, Frederic J. Waters, of Tarlac, Hammond H. Buck, of Batangas, C. D. Whipple, of Nueva Ecija, and C. W. Franks, of Cavite; John S. Potter, Chief of the Division of Publications and Industrial Information; North H. Foreman, Inspector of School Gardens and Sites; Bruce E. Ingersoll, Inspector of Trade Schools; Luther Parker, Industrial Inspector; O. S. Hershey, Inspector of Machinery; Mrs. Alice M. Fuller, Supervisor of School Kitchens; Hugo H. Miller, Head of the Industrial Information Department; W. K. Bachelder, Instructor in Gardening, Philippine Normal School; Austin Craig, of the College of Agriculture; Miss Mary H. Fee, Chief of the Correspondence Study Division; Miss Anna M. East, Philippine Normal School; and Antonio Jonson, of Laguna. Committees were organized which considered the various phases of a general corn campaign. The committees strongly indorsed such a campaign and recommended, among other things, that production,

consumption, and popularization of corn dishes be emphasized; that contests in corn growing and demonstrations in preparing and cooking corn be held throughout the Islands; that a publication on corn be issued as a basis for lessons to school pupils and as a civico-educational lecture to be given to the older people; that posters be distributed; and that a small hand corn mill be introduced.

CORN-GROWING CONTEST.

In accordance with the recommendations of the conference, a circular was sent to the field outlining the general plan for the corn-growing competition which is being conducted in two distinct contests. One of these, designated as Contest No. 1, is concerned with the quantity of corn that can be grown on a given area of land. The other, known as Contest No. 2, deals with the quality of the best five ears of corn submitted in an open contest. Boys enrolled in Contest No. 1 will devote their attention to the cultivation of the corn demonstration plots located at their homes. It is provided that any pupil of the gardening classes who desires to do so may cultivate a small patch of corn in connection with his regular garden work and enter Contest No. 2. To insure the most good, provisions have been made whereby the corn plots will be visited weekly by a teacher who shall give needed instruction. Permanent records in the form of enrollment cards are prescribed for each boy entering the contest. This ensures a very definite record of all corn exhibited in the many provincial exhibits and in the final exhibit to be held in Manila. While no arrangements have been made for prizes, suitable certificates will be issued to winners of the provincial and insular contests.

JUDGING CORN.

In order to carry out Contest No. 1, it is essential that provisions be made for uniformity in judging all corn submitted in the ear contest. This is to be accomplished by the use of a standard score card. This score card, which will be the first of the kind to be used in the Philippines, is prescribed for all contests so that each exhibit may be scored by the same standard. That pupils may know how to tell good corn, the score card is to be made the subject of lessons for all boys enrolled in the corn contest.

CONDUCT OF CORN EXHIBITS.

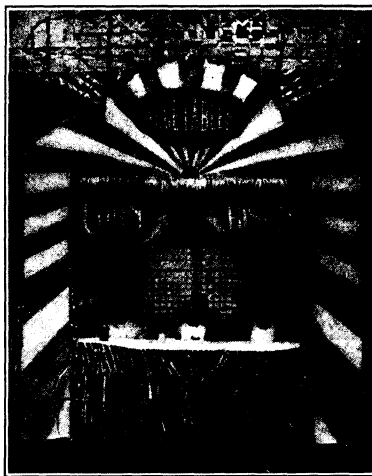
That the general public may become interested in the campaign, well-organized corn exhibits will be held in all parts of the Philippines. Definite details have been issued in Circular No. 91

on the conduct of corn exhibits so that they may develop later into agricultural fairs. Exhibits will be held in the schools of provincial capitals and the larger municipalities as well as in many local centers. The exhibit day is planned as an agriculture day for the people. Farmers will exhibit farm crops; school pupils will exhibit products of their gardens; all classes of industrial work will be displayed; corn demonstrations will be held; and athletic sports will round out the "Garden Day."

CORN DEMONSTRATIONS.

The feature of "Garden Day" will be the corn demonstrations, in which points pertaining to an increased yield of good corn will be shown. The interest of the people will be aroused in the use of corn as a human food.

Well-organized demonstrations are planned for all provinces. These will first be held in the largest towns and later extended to even the most distant barrios. Demonstrations will be given in connection with town fiestas, corn exhibits, garden days, and athletic meets. Booths specially constructed for the purpose will be devoted to the display of points pertaining to the growth of corn; good cornstalks with ears; ears of corn; seed testing; preparation of corn meal; and the preparation and serving of corn dishes. The people will



One of the booths at the Malabon, Rizal, Corn Demonstration.

witness a working exhibit where trained demonstrators are engaged in explaining each process and in preparing and serving free of charge tasty corn dishes. These dishes will be prepared where each process can be observed by the people. Only such utensils and ingredients as are found in the ordinary Filipino home will be used. It is thus hoped that the people will become interested, will secure copies of recipes, and will learn to prepare palatable corn dishes for themselves.

CORN RECIPES.

Only such recipes will be distributed as have been found, through the result of many trials, to be easy of preparation and to the liking of the people. That the growers of corn, even

in the most remote localities, may know of good corn dishes, a set of common recipes has been sent out for trial in domestic science classes. From them selections will be made for use and for further distribution at the demonstrations.

CORN POSTERS.

The plan for interesting the general public includes the use of a series of three illustrated corn posters, treating of seed selection and seed testing, preparation of the soil and planting, cultivating and harvesting. These posters are to be distributed in such quantities that they may be displayed in all schoolhouses, municipal buildings, and public markets. Every point pertaining to corn production will be graphically presented.

CORN LECTURE.

To insure sufficient available information for advanced primary pupils on the essential points of corn production, an illustrated publication very elementary in character has been prepared and is being sent to the field. This is known as Civico-Educational Lecture No. 8, "Corn." It is being distributed in such quantities that it may be used in class instruction for all pupils engaged in corn growing or gardening. This publication will also be the basis of one of the civico-educational lectures given annually by the teachers in all parts of the Islands.

CARNIVAL DEMONSTRATIONS.

As previously stated, every detail of the campaign is so planned that it will close with a corn exhibit and demonstration as a part of the Bureau of Education's annual exhibit to be held in February in connection with the Carnival at Manila. Here the winning exhibits from all provinces will be displayed and judged to determine the winner of the Insular contest. A small display of corn was a part of the vegetable exhibit of the Bureau of Education at the Philippine Exposition in February, 1912, but in 1913 the general public will be treated to the first large corn exhibition ever given in the Philippine Islands. A general demonstration, with every detail of the campaign for corn as a food ready for the inspection and instruction of the public, will be held. Trained demonstrators will be constantly engaged in explaining the features of the display, in distributing recipes, and in serving corn dishes.

CORN MILLS.

The Bureau has purchased 150 hand corn mills for general introduction. The distribution of these mills throughout the

provinces will form one of the features of the corn demonstrations. The mills secured are inexpensive, and they should at once replace the primitive stones now used. They are for sale to provinces at an approximate cost of ₱7.00 each, including an extra pair of burrs. The need for a satisfactory mill is understood when it is explained that nowhere in the Philippines are there any gristmills where corn may be ground for toll, as is common in corn-growing countries.

PROVINCIAL NOTES.

That the campaign is launched and well organized in all provinces is shown by the manner in which the corn contest is being received in the provinces. Cavite reports all schools organized and the boys enthusiastic. Cebu states that the division superintendent and the supervisor of gardens are making a tour of the island, which is the leading corn province, and are enlisting the coöperation of municipal officials in the organization and conduct of the corn campaign. Union Province reports the contest organized and well under way in all schools.

The good to be derived from an active participation in such a food campaign will be felt for years; the development of one food crop must awaken the people to the possibilities of others. Agricultural improvements may be preached and written about, but no other propaganda will accomplish the same amount of good as the actual growing of crops. It is upon this principle that the corn campaign is based. With the boy growing good corn, and the girl preparing appetizing corn dishes, the father will be convinced that corn can be improved and that it is a proper food for his family.

It would be part of my scheme of physical education that every youth in the state—from the King's son downward—should learn to do something finely and thoroughly with his hand, so as to let him know what touch meant; and what stout craftsmanship meant; and to inform him of many things besides, which no man can learn but by some severely accurate discipline in doing.—JOHN RUSKIN.

“One of the chief values of shopwork, weaving, gardening, etc., even in elementary schools, is that they introduce the pupil to natural facts and forces and give him a motive for becoming thoroughly acquainted with the concrete facts and laws of nature.”

SOME NOTES ON THE TREND OF EDUCATIONAL THOUGHT IN THE UNITED STATES AND IN THE PHILIPPINES.

THE *Journal of Education* (New England and National) for July 25 contains an account of the proceedings of the fiftieth annual meeting of the National Education Association held at Chicago July 6 to 12. The following very pertinent statements are quoted from the address of the president, Carrol G. Pearse, Superintendent of Schools, Milwaukee, Wisconsin.

"Our children must not be allowed to grow up without the power to work with their hands or to apply themselves to useful and homely duties during their most impressionable, formative years.

"It may be that this opportunity can come in connection with the home and its tasks and duties; it may be that by coöperation of the school with the home the problem may be solved. On the other hand, it may be that it will be necessary to devise some plan by which, in towns as well as in some of those model farm schools which are scattered here and there through the country, children may devote the proper number of hours each day or week to the exercises of the schoolroom and to the study of books, while during the other hours of the day or the week they have an opportunity to do some real work in the shop, in the factory, or in some such place as the thoughtfulness and good sense of the industrial employer, in consultation with students of educational and social problems, may be able to bring into use."

The following is an article entitled "Significance of the Industrial Arts in the Schools," by Dr. Charles A. McMurry, Director of Normal Training, DeKalb, Illinois:

"The characteristic of the Arts and Crafts work is manual effect. It consists in directing motor action along typical lines of construction in special trades. We will sum up the grounds on which this motor activity is recommended to the schools.

"First—It supplies an educative outlet for the great physical energy of the children. This powerful impulse for activity in constructive work has not always caught the attention of the

teacher, but we may be justified in saying that the constructive instinct in children is as strong as the play instinct.

"Second—Our psychology greatly strengthens the argument for motor action. Our present psychology centres in the statement that every sense impression tends to work out through a nervous pathway into motor action.

"Third—Mastering the difficulties of construction leads on to mental as well as muscular control. The child is getting possession of himself.

"Fourth—The right kind of motor training leads to the same kind of healthy physical development as well regulated sports.

"Fifth—A full equipment of shops, gardens, and other facilities of work for all children is an obvious need of our present civil life.

"Sixth—To sum the matter up, the large problem is how the child is to work his way into proper relations in the physical world and to the social world about him.

"If the conclusions stated above are justified, the great moral value of the arts in the education of children lies in their ability to give an appreciation of our duties to our fellow men.

"The manual arts are not being emphasized in their relation to vocational training. The industrial arts in schools prepare for vocational life in two ways:—

"First—By giving variety of motor training and a versatile mental attitude toward constructive problems. It trains one to adjust himself to new situations.

"Second—By giving positive experience and knowledge of several typical arts. This forms an introduction to the course in the arts, greatly facilitating the mastery of any particular art when the time comes to specialize."

Right along this line may be called to mind the oft-repeated statement that when a farm-bred boy and a city-bred boy are put side by side in a trying position the former is almost sure to win out while the latter has fewer chances for making good. This statement may or may not be true. However, the average boy from the good old-fashioned rural community certainly had an advantage over his city-bred brother. From the time he became old enough to make himself useful he was always kept busy with healthful, instructive, or productive occupation of some sort. He split the fire-wood; he milked the cows; he churned the butter; he gathered the eggs; he fed the chickens, pigs, cows, and horses; he "made garden;" he plowed, harrowed, and planted his father's fields; he helped to harvest and prepare

the grain for market; he became, without making any special effort, thoroughly acquainted with all the details of the construction and workings of every piece of farm machinery; on rainy days he busied himself indoors with repairs and even construction of tools and implements; he derived a working knowledge of carpentry from assisting in the construction of stables, granaries, and barns; he knew the current prices of every farm product; he was on speaking terms with every flower of the pasture; he called every bird by name; every tree of the forest was to him an open book. And when he became a man, he was able to excell in all his undertakings, because he knew many things and knew them well—knew how to do many things and do them well. His was “the mettle of the pasture”—the spirit of a man born and nurtured close to the great heart of Mother Earth, where the sun smiles instead of stifles and the rain freshens instead of bringing discontent. From his earliest years, without knowing it, he was engaged in some phase of the all-important work of transforming raw material into the finished product; and the same process wrought by him upon the materials at hand was reflected back into his own life—he himself as raw material in character was being transformed into a man of parts.

This is why the farmer boy generally succeeds in special vocations. He arrives at the stage of manhood with mind and hands trained to constructive activity; and, although the work he may have to commit his energies to upon leaving the farm may be something entirely new to him, still the faculty of investigation and mastery is already well-developed within him and he is ready in an emergency to stand upon his own feet.

In former times in the States, before the city occupied the place of importance it occupies to-day, most boys secured this training of the hands from their daily occupations. Now, however, conditions are changed. Along this line, President Pearse sums up the results of his observations as follows:

“Our public educational system stands in the presence of great impending changes. The system as it is now among us, its curriculum, its daily hours of work, its weekly time arrangement, its grouping of terms and vacations, grew up at a time when social and industrial conditions were far different from those which exist to-day. The subjects which until within a few years were included in the curriculum were those which were thought desirable at a time when many aspects of education were looked after in the home. The daily school hours were

arranged when children had work to do at home in the morning and in the evening—chores and household tasks that required their attention and their time. The weekly program of school exercises was also arranged at a time when both girls and boys had work to do at home. Their help was required to such a degree that out of the six days of the week only five could be devoted to the school because necessary home tasks crowded.

“With the tremendous changes that have come into our industrial life, with the continued clustering together of our people into the cities, we still maintain too largely a school curriculum formed under conditions which have passed away; we still maintain a daily and weekly school program that was dictated by conditions which for a vast proportion of our people no longer exist; and our program of terms and vacations smacks still of the rural community, though an ever increasing horde of our people dwell in towns. We thus have placed upon us the responsibility for recognizing the changed conditions and for so recasting the subjects of study in the schools, our daily and weekly program of school exercises, and our arrangement of school terms and vacations, as to meet the changed conditions in which we live. It is for us to bring back the schools to such touch with life that the school may meet the conditions of our present-day communities.”

In the Philippines, the social conditions and the local distribution of the population are such that until within recent years practically the only children who ever saw the inside of a school room were those who never engaged in any manual labor of any sort—children from the better-to-do families of barrios and municipalities who led a life of absolute ease, depending upon their servants for every stroke of manual labor that had to be done. It was not even uncommon for a servant to be required for carrying the pupil's books to and from school.

Naturally the pupil living under such conditions secured but a one-sided education. He could spin fine theories and philosophize most astutely; but his practical knowledge of things in general was apt to be nil.

The present system of education has opened the school house door to rich and poor alike; but the fact that the mass of the population live in groups (barrios) precludes the possibility of the pupil's getting at home the same healthful work experience enjoyed by the average farmer boy all over Europe and the United States. Recognizing this fact, our schools have stepped in and provided such industrial instruction as may have the effect of meeting the deficit.—J. D. D.

"There is pleasure in working in the soil, apart from the ownership of it. The man who has planted a garden feels that he has done something for the good of the world. He belongs to the producers."—C. D. W.

"No child who has ever loved a garden will despise the farmer, for he has learned by experience to respect manual labor, and that brains and hands must work together to bring good crops."—M. LOUISE GREENE, Ph. D. (Yale).

The bulletin on "The Chosen Educational Ordinance and Various Attendant Regulations" has been received from the bureau of education of Chosen, that province of the Japanese Empire which was formerly the independent nation of Korea. This ordinance makes provision for three general classes of schools—common schools, industrial schools, and special schools. It is notable that in organizing the new school system for Chosen, it has been found advisable to make the industrial schools one of the three general branches of public education. The governor-general of Chosen in issuing the ordinance on November 1, 1911, stated: "The industrial education shall have as its aim not only the training in knowledge and art required in the branches of industry concerned, but also undertake to accustom pupils to the habit of diligence." Quoting from the ordinance: "The education given in an industrial school should lay special importance on practice and should avoid too much teaching of theories. It should agree with local needs and conditions and be practicable, so that the pupils may acquire knowledge and art indispensable to daily life and afterwards contribute to the improvement and development of industry."

An admirable provision in the educational ordinance requires instruction of an industrial nature through all the grades of the common schools from the lowest up. The work is practicable; the object is to teach the pupils to make useful and salable articles, and to prepare them for their future work by training the hand and eye as well as by engendering in them a love of hand work. From the industrial work of the common school, the child falls naturally into the more advanced and even technical training of the industrial schools, where he learns every detail of the trade which he chooses and which he follows in after life.

EDITORIAL AND OFFICIAL.

AT THE opening of the present school year, the Bureau of Education undertook an enterprise which will be probably the most effective single piece of work to which the public schools have yet devoted their energies. It is in the solution of a problem affecting most intimately the economic condition of the people—that of the improvement of the food supply. The enterprise to which reference is made is the present general corn campaign.

The Corn
Campaign.

While the encouragement of corn is but one phase of a single branch of school industrial work, it is now to receive such attention as will bring it to the front, not only in the year's work in the schools, but also, if its results are in any degree as successful as they now promise, in the estimation of the year's accomplishments of the people generally.

Much has been said of the need of an auxiliary food supply for the Philippines. The possibility of droughts such as that experienced during the past year and the lack of suitable control of the water supply by means of irrigation systems place the people in a precarious situation where they depend upon a single staple food crop. The need for an auxiliary food crop has long been evident, and agriculturalists have continually pointed out the possibilities of tree crops and yams and cereals other than rice. Corn has been looked upon as one of the most promising of all these auxiliary crops; and the possibilities of this cereal are so promising now that it does not seem at all improbable that corn, encouraged as an auxiliary food crop, should take its place as one of the staples—a food to be found on the tables of all, as common as rice. But there are many obstacles in the way.

Corn is known in all parts of the Philippines; most of the people have eaten it at times; but a variety of reasons have combined to prejudice the people against it as a human food. Foremost among these is the fact that the people have not been taught to raise good corn economically and to prepare from it wholesome dishes. The people can hardly be criticized for disdaining the use of corn if they can obtain rice, when we consider that a usual method of preparing corn by cracking

it and boiling it with salt in the same manner as they do rice gives them a food which is far from palatable and which is frequently the cause of digestive troubles. The two important problems of the corn campaign are to teach the people how to raise plenty of good corn and how to prepare it properly for human consumption. This movement in favor of the use of corn has not been undertaken hastily. The proposition has been long considered and thoroughly discussed by the directors, and by others whom they have consulted, and the final plans have been adopted after a most careful study of the conditions and the means at hand for meeting the difficulties which must arise. Elsewhere in this issue the plans for the campaign are set forth in considerable detail.

The corn campaign in the average school division is to follow along certain well-fixed lines. A series of corn-growing contests has been arranged for the boys of all the public schools in the Islands. Information has been sent out to the schools on the judging of seed corn. Three corn posters which have been distributed broadcast over the country take up the selection and testing of seed corn, the preparation and planting of the land, and the cultivation and harvesting of the crop. These posters will be conspicuously displayed where they will have the attention of the people generally. A complete line of corn exhibits, from the smallest barrio display to the Insular exhibition which will be held in Manila, has been provided for. A Bureau publication on corn has been issued as a civico-educational lecture; it is couched in simple language and is illustrated; it will be taught to all school pupils, and will be the subject of a civico-educational lecture in which the teacher will explain the value of corn to the people of the barrios. The Bureau has arranged for distributing throughout the provinces a number of small and inexpensive hand corn mills which will transform the hard kernels into the convenient corn meal. A number of well selected recipes on the preparation of corn with the ingredients and utensils available in the ordinary Filipino home have been issued and have been given extensive publicity. A system of suitable awards for successful competition in the several features of the campaign has been suggested and will be encouraged. It will be the purpose of every division superintendent to train a competent corps of teachers for demonstrating to the public the preparation of corn dishes.

This brings us to the highest point in the corn campaign—an extensive series of corn demonstrations in which the public

will be invited to witness the preparation and serving of the wholesome dishes which can be made from corn, and also to partake of them. These demonstrations will begin in provincial centers, from which points trained demonstrators will extend them to the municipal centers; and it is planned ultimately to take them far into the barrios where the last Filipino farmer may also be enlightened on the possibilities of corn. It is a program full of promise; and the results of the publicity work which has been done so far are encouraging indeed.

Nor is this interest in the corn campaign felt alone by the superintendents and teachers and pupils of the schools. Everywhere assurance is evident of the active support of the general public in the campaign. The Executive Bureau has been ready with suggestions and advice and, more practically, with the matter of interesting the provincial and municipal governments in financing the campaign. The Bureau of Agriculture is in the field already with a pamphlet on corn culture and stands ready to assist in the campaign in every way possible. The Philippine press and the public are most hearty in their appreciation of this measure; the newspapers have given much valuable publicity to the information which constitutes so great a factor in arousing and maintaining interest in the campaign.

Now seems to be the time for a move in the right direction, and the corn campaign as it has been launched, with proper direction throughout the present school year, must from very merit accomplish its purposes. The aim is to encourage the people to grow corn and teach them to eat it; to show them that corn is an excellent human food and then have them raise more of it; and to teach them the many wholesome good things which can be made economically from corn.

A review of the enrollment statistics for the Manila City Schools, especially the High School, reveals a strikingly apparent tendency upon the part of provincial pupils to drift into the city. During the school year 1911-12 there were enrolled in Manila High School approximately 800 pupils, of whom some 500 were from the provinces. For the current school year the status of this school is about the same.

Some of these provincial pupils are here because of the fact that the year of high-school work they are up for is not being

The Provincial
Boy in Manila.

given in their home provinces. However, a large percentage of them could secure in their home schools the same year of instruction as that which they are receiving in Manila. The most of them, when interviewed as to the reason why they do not attend school at home, state that it is cheaper for them to live in Manila, as they have relatives here who can support them, and that their fathers and mothers, especially in the case of pupils living outside of the provincial capital, are not able to keep them in school.

Perhaps, if the truth were told, a stronger reason would appear as to why the provincial pupil is here in Manila in such large numbers. It is the bright lights, the gaudiness, the excitement, the theatre, the everlasting come-and-go of the city, as compared with the humdrum life of a provincial town—it is this which attracts him as the moth is attracted by the flame. This social phenomenon is not peculiar to the Philippines. It obtains in other countries as well—in some to an extent quite equal to that in which it obtains in the Philippines, in others not so much.

There are also economic reasons for this drift toward the city; but it is quite possible that if the drift could be checked, that fact in itself would have a tendency to cause those economic conditions to disappear. Pleasing tales are told as to how certain boys upon coming to the city readily find employment which enables them to continue in school; but it is only the few who are so fortunate, and the majority of those who drift in fail to find employment and become an actual charge upon their relatives or else have to drop out of school after a short period of precarious existence.

They plead hard times in the provinces as their excuse for coming to the city; but these young men who leave the provinces—are they contributing in any manner whatever toward alleviating the untoward economic conditions there? Every pupil who comes to the city to get his education, when he could get exactly the same line of study without going outside of his home province, is detracting very materially from the importance which of right should attach to that province. Loyalty to home and home interests is one of the things these pupils must learn; and if they do not take this lesson to heart voluntarily, another way will be found for bringing it home to them.

As a matter of fact, the province is the all-important factor in the economic situation in the Philippines. Its educational

and industrial advancement means the welfare of the country in general; and every pupil who is interested in his country's welfare will do well to stick to his home province as long as she has anything to offer.

There seems to be current among many Filipinos the impression that the educational advantages obtaining in Manila are superior to those in the provinces. That is not the case. The course of instruction and the character of the teaching personnel, especially in the intermediate and high schools, are everywhere the same, no preference being given to any school over any other.

At the beginning of the current school year the Municipal Board of the city of Manila passed an ordinance imposing a tuition fee of thirty-six pesos per annum upon intermediate and high school pupils coming in from the provinces; but even that measure has not stopped the drift city-wards. In all probability the matter will be handled next year either by increasing the tuition fee or else by administrative order.

In this country, as in others, the fact must be recognized that a secondary education is as yet for only a small percentage of the population. For purposes of honorable, upright, and intelligent living, a secondary education is no more of a necessary prerequisite than immense riches. One may even go a step farther and say that the intermediate course is not an absolute necessity. The primary course is; and recognizing that fact, the Government is rapidly bringing it to the door of every child in the country. Beyond the primary course, and more especially in the case of the high school, the question with every individual pupil must be that of who can afford it and who can not—of how much sacrifice should be made and whether or not the probabilities of a useful career in some special vocation are sufficient to warrant the sacrifice.

Charles Spurgeon's famous dictum "you can not make a silk purse out of a sow's ear" has a tremendous pedagogical significance. Just as soon as a high school pupil shows unmistakable weakness, he should be taken out and put to work. To keep him on will mean loss to him personally and to the community in general. You can't change the leopard's spots; neither can you add one cubit to your intellectual stature after you have reached your limit.

The following cases are cited to illustrate the extremes to which some pupils have gone in what the writer considers an unwarranted desire to secure a high school education. A boy from a

certain province, in giving his reasons why he thought he should be exempt from paying tuition, stated that his parents were too poor to support him and that he depended entirely upon his brother who was working here for a peso per day. Another boy of similar circumstances stated that he was supported by his uncle whose monthly income was ₱22. Another pupil was found to be the brother of a Government pensionado who was undertaking to support both himself and his brother out of the monthly allowance. Another pupil had finished the intermediate course in a provincial capital, being supported there by his aunt. The aunt's husband died recently, whereupon she came to live with her daughter, a teacher in the city schools. This teacher has a family of her own to support, but the nephew of her mother expected to depend upon this teacher for support. In all such cases, of which those detailed in the foregoing are only a few, the decision has invariably been that it was time for the pupil to engage in some remunerative occupation.

Speaking of pupils' securing employment in the city, perhaps the most forceful comment on that subject is contained in the placards "No vacancies" posted in practically every office. Too many provincial boys have their eyes turned toward the Mecca of Manila, expecting that after the journey hither the rest will be easy sailing. If they have relatives here, well and good for the time being; but if not, they are apt to encounter hard times such as they have not known in the provinces. It is only the exceptionally well qualified boy who secures anything above menial employment, and the very great percentage of all who apply are not qualified for doing anything above that sort of work.

One of the remedies for this condition of affairs is contained in the specialization of the intermediate course of study. The amount of academic instruction given in the primary and intermediate courses is abundantly sufficient to enable any boy or girl to read, write, calculate, and live honorably, intelligently, and to some effective purpose.

The vocational instruction given in connection with those courses will enable the pupil to secure an elementary working knowledge of various lines of remunerative manual employment. Beyond this, it is not necessary for the pupil to aspire in order to fit himself for living respectably and well; and it is certainly unwise, from the standpoint of both health and economy, for him to attempt to force himself past the point marking his physical and financial limit.

But little more than a century ago when aristocracies held full sway, education was for the chosen few. Its benefits were the prerogatives of the children of the ruling class.

**Present Day
Tendencies.**

Its aims were wholly for cultured leadership, or for entrance into law, medicine, or theology.

With the later spread of democracy, however, the common classes began to demand and to obtain the same educational privileges which had been originally enjoyed by the leading classes alone. This brought about the introduction of popular education, copied naturally after that already existing for the aristocratic strata of society. Notwithstanding the economic changes from agriculture and poorly organized household industries to the intensely specialized industrialism of to-day and the political revolutions from aristocracies to democracies, it thus came about that the ideals, methods, and subject matter of popular education were identical with those prevailing previously for the highest grades of society.

This explains the anomaly of making the college lead only to the learned professions, of having the high schools based wholly upon college entrance requirements, and of focusing the curricula of grammar schools solely upon requirements for entrance to high schools.

Curiously enough, the universities were the first to introduce practical and technical subjects and now in the great state universities the number of students taking courses designed for culture alone is considerably smaller than the number taking courses related directly to life work. This movement has extended downward to some degree into the high schools, as is evidenced by the ever increasing number of manual training and domestic science courses. Only seven per cent of the children in the United States ever enter high school and only two per cent ever graduate therefrom; yet the vast majority of these pupils receive only English, Latin, mathematics, and history—all cultural subjects possessing but little value either in the industrial world or the home.

While a small but increasing proportion of high school pupils receive some industrial instruction, 93 per cent of all pupils are enrolled in the grammar grades where industrial instruction has not yet been taken up, unless one takes into consideration the few vocational classes planned for backward pupils.

In the Philippines only one per cent of the pupils reach the high school and only six per cent reach the intermediate course. These low percentages are increasing steadily as our educational system becomes older and better established. Even so, it is too

much to expect, in our generation at least, that they will equal or surpass those for the United States with its almost unlimited resources and long established school systems. Acknowledging, then, the relatively small proportion of pupils who can hope to enter the intermediate grades and the still smaller proportion who can aspire to the high school, it is evident that our educational system should centralize its best efforts on its lower grades. It should prepare them, in so far as possible, to take up their life work with the maximum efficiency and the minimum loss of time in readjustment from school to life work. It should give enough of the cultural so that the progress of the pupil may not be cut off at any stage of his schooling on account of the limitation of the course. It should give enough of the vocational so that the pupil who is able to take up higher work may do so with the confidence of having a vocation to fall back upon in case he later finds success in the higher work beyond his grasp. It should give enough industrial work to fit the pupil unable to complete the higher grade to enter at once with a marked degree of efficiency upon his life work.

The Twelfth Annual Report of the Director of Education was recently completed in the General Office, and submitted to the Secretary of Public Instruction, the Head of the Department. This report is now in the hands of the printer, and will be ready for distribution in a few weeks. While the information contained in this annual statement of the Director with its more than sixty tables will be interesting to the school people of the Islands generally, the readers of *THE PHILIPPINE CRAFTSMAN* will be more particularly interested in the comments of the Director on the advance along industrial lines during the past year. The report has no new industrial program to offer, nor does it anticipate any changes in the present policies; but it does present some significant figures on the accomplishments of the year along the lines determined upon and announced in the Tenth and Eleventh Annual Reports as proper industrial activities for the schools, and it emphasizes the confidence of all interested parties in the policies adopted.

The Twelfth Annual Report dwells upon three school activities particularly: industrial instruction, the building and sites program, and the work in physical training. In a striking manner, the figures on the special intermediate courses of study indicate the tendency towards the industrial courses. The

figures for this year show 40 farming courses, 61 schools giving the course in housekeeping and household arts, 36 regular trade courses, 42 schools with a teaching course, and 1 with the business course, while 204 still offer the general course. The tendency will be to still further decrease the number of schools giving the usual general course, requiring something more industrial and more in line with the policies of the Bureau to-day.

In another way, the present report shows some 216,000 boys and 125,000 girls doing some kind of industrial work—that is, 91 per cent of the total enrollment for the month of February, an average month on which the industrial figures are based, were engaged in some kind of profitable school industrial work. Incidentally, when the requirements of the courses of study are fully met in all school divisions, the greater part of that percentage which is thus reported as idle in so far as industrial school work is concerned will be eliminated.

More specifically, we find that out of the total of some 8,000 teachers employed by the Bureau, 580 are classified as strictly industrial. In addition to this, a large majority of these 8,000 teachers were very materially interested in the industrial work in their class rooms. We find nearly 38,000 pupils doing plain sewing and some 5,000 taking up cooking. Embroidery was an industrial line for more than 12,000 girls, while the comparatively recent school industries of lace-making and Irish crochet interested some 17,000 and 1,300 pupils respectively. The making of baskets, hats, slippers, and mats continued to be popular subjects, particularly for boys, more than 100,000 doing work on baskets, 30,000 on hats, 18,000 on slippers and 40,000 on mats. In the longer established trade work, we find 13 regularly organized trade schools with more than 1,300 students and 23 trade courses given in the ordinary intermediate school shops to an additional 900 students, while nearly 7,400 boys took shop courses in the ordinary intermediate schools. In addition to these, 236 primary shops gave instructions in elementary woodwork to about 10,000 pupils.

A departure was made in the extension of schools giving farming and gardening work. In the Twelfth Annual Report, we find 5 regular agricultural schools with an enrollment of 232 students; 24 schools giving the intermediate farming course to 1,400 pupils; 17 settlement farms among the non-Christian people with enrollment of 1,200 pupils; and 5 non-Christian industrial schools enrolling 350 pupils. While school gardening has had consistent attention, unusual interest has been cen-

tered in the development of home gardens, the number of which has increased from some 10,000 in the preceding school year to nearly 23,000 for the school year just passed. This is an unusual record. The reports also show 83 school nurseries well scattered about the Islands with nearly 25,000 seedlings growing. All these figures point out noticeable advances over the work of the preceding year.

To quote from the Director's report:

"The foregoing is a statement of facts. The time for discussion of experiments being made and for argument as to the correctness of policies being followed is past. The figures offered must stand for what they are worth. However, there is one criterion by which the success of a system can be judged and which cannot find an adequate place in these pages; i. e., the place which the industrial instruction of the public schools has in the estimation of the people. The Carnival exhibits of the past few years have been a succession of surprises. The exhibit of February, 1912, was successful to such an extent as to guarantee the approval of the public, official and non-official, both American and Filipino. This exhibit awakened unusual interest on the part of Manila merchants, particularly German and English houses, in the possibilities for extension of certain lines of school industrial work.

"As plans along these lines develop, the problems to be solved assume more definite and tangible form. A year ago officials and the public alike looked largely to the probable industrial product of the schools as the ultimate result of the work. That is not the end to be attained; the scope of the work is much broader. In industrial education, as in every other subject, the schools must serve as a medium of instruction only, and the great problem of the coming year will be to extend to the homes of the people the industries now taught in the schools. Plans for the accomplishment of this end are already under way.

"In line with this problem, and closely related to it, are several others, viz: acquainting the producers with the most profitable markets and prices their handiwork should command; keeping those who engage in such work in touch with demands of the markets as to style, quality, etc.; and the securing of a uniform and standard production from all parts of the Islands. The Bureau is now in a position to undertake their resolution intelligently."

In these facts the CRAFTSMAN is intensely interested, and the solution of the problems which still remain constitutes a great part of its mission.

The first session of the Philippine Legislature passed Act No. 1829, providing for a series of civico-educational lectures throughout the Philippine Islands, under the auspices of the Bureau of Education. The law provides that these lectures are to be prepared under the Director of Education and are to be delivered by municipal teachers in the towns and barrios in such a manner as to reach the masses of the people and be of interest to them. The subject matter of the lectures is to be translated into the local dialects and presented in this form.

**Civico-Educational
Lectures.**

For the present school year the following series of lectures has been determined upon and advertised:

October 6, 1912.—The Rights and Duties of Citizens of the Philippines.

October 20, 1912.—The Housing of the Public Schools.

November 3, 1912.—The Prevention of Disease; Diseases of Animals.

November 24, 1912.—Rice Culture; Coconuts; Coconut Beetles.

December 15, 1912.—Corn.

Such lectures on topics of general interest to the people have been given each year since Act No. 1829 was enacted, but with varying success. In certain communities where the teachers and people have received the program with enthusiasm, the results have been notable. Here the teachers have as a body appreciated this opportunity to bring the people who are now outside of the modern school influence in touch with certain of the more important topics of the times. In some other localities the lecture series has been conducted only perfunctorily as one of the duties required of teachers and officials; interest has been slight and the results obtained have in no measure justified the efforts which have thus been put forth merely to comply with the law.

This year the civico-educational lectures should have a new meaning to the teachers and people. A new lecture has been added to the list, No. 8, on Corn, and it should give an added impulse to the series generally. The corn campaign which has been so extensively advertised by the Bureau is now a reality; its influence generally, and as one of the civico-educational lectures particularly, should mean much to the entire program for interesting the people in those affairs that are very near to them. The lectures have been placed early in the school year and at convenient intervals so that they will be completed before the stress of other school events early in 1913.

The instruction of the people through a medium of well selected lectures is a proper school activity, worthy of a fuller measure of attention than it has had. The lectures should be given publicity; the officials and leaders should be interested in them; the gatherings should be made lively, pleasant functions. Superintendents and teachers may by their activity take the civico-educational lecture out of the doubtful class and make it a real success.

The little journal, "La Escuela Mexicana," published in the city of Mexico, is the official organ of the Mexican school department. In an April number it published a program for shop classes in the intermediate schools. This would indicate that the Mexican school administration is definitely adopting a policy of industrial education for the Republic.

From a report on public education in Siam: "Not much attention has been given to industrial work as yet * ; * technical schools of various kinds are being opened. Manual training and practical instruction along certain lines are now being offered in the various courses; but there are few, if any, industrial schools, in the ordinary sense of the term."

From the above it would appear that in Siam industrial education presupposes special industrial schools; in the Philippine system at least, the special industrial school represents only the highest form of the practical work which begins with the lowest pupils and correlates with the academic work through all the grades.

There is no escape from this natural fate of industry but state intervention, not too long postponed, to supplement the one-sided education afforded by industry, trade, and traffic. It is, in fact, an entirely new duty that has arisen for the community since the economic revolutions of the last century. It arose not only in the interests of industry but in the most vital interests of the community itself. It is the imperative duty of the state school organizations which deal with the trade-training of boys and girls, which enter into the question with the utmost thoroughness, enlarging and deepening it, and thereby awakening in boys and girls many-sided capacity for work and a living joy in work.—Dr. GEORG KERSCHENSTEINER, Director of Education, Munich, Germany.

INDUSTRIAL NOTES.

THE PASIG CORN DEMONSTRATION.

The first public demonstration in the present campaign to popularize corn as a human food was held on the grounds of the Pasig provincial school throughout the entire day of August 24. Those instrumental in carrying out the arrangements for the demonstration were the division superintendent and the teachers and pupils of the provincial school and the central school of the municipality. In addition to the features bearing upon the subject of corn, an extensive program of athletics, consisting of basket ball and volley ball contests and group games, also had a place in the day's program.

Judging from the number of people who visited the grounds and sampled the various palatable dishes prepared from corn, and the taste and skill shown in the general arrangements, the demonstration is pronounced an unqualified success.

The scheme of decoration deserves special mention. Corn in one form or another was employed for construction or ornamental purposes in connection with all of the six booths in which the demonstrations were given. Walls and tops were of corn stalks or corn ears, railings were of bamboo covered with corn husks, signs and notices were of strung corn ears and grains and, in one case, of sections of the cob surrounded by kernels. Festoons of strung kernels, plain and popped, adorned the front of the largest booth.

The making of corn bread was demonstrated in one booth, with the work actually in process under the

care of girl students. Large signs conspicuously displayed invited attention to the formula for making the bread and individual recipes were distributed for home use. In an adjoining booth, stewed and fried corn were cooked and served, and printed directions for preparing were given out. Still further on were the booths for the confection and serving of corn and tomatoes and corn mush. In the booth next to the domestic science building, hand implements of American and Filipino design for shelling and grinding corn were exhibited in connection with a series of posters giving pertinent facts regarding the production and consumption of corn in various countries of the world and the possibilities open to the Philippines as a corn producing country. At the entrance to the grounds was the hominy booth, the arrangement and working plan of which were particularly effective. The making of the lye was shown from the stick of guava wood to the completed stage, as well as the actual preparation of the hominy in earthenware pots. On the counter were displayed appropriate forms for serving it, either fried, or with grated coconut, or with milk and salt.

A conservative estimate of the number of people who tasted one or more of the corn recipes, based on records kept in the booths, may be placed at 1,800. In view of the practical character of the work presented, it was hoped that the laboring class in field and town would be drawn toward the demonstration grounds. In this the results were highly gratifying.

The sum of about one hundred pesos was expended for materials used for the construction and decoration of booths and for the products consumed. It has been estimated that this sum will in many cases be ample for holding a corn demonstration in which all the necessary features and details may be presented; for half of that amount, the subject can be satisfactorily demonstrated in one of the smaller towns.

The constant moving of the public to and fro from booth to booth, the interest and enthusiasm shown in all the features pertaining to the demonstration, and the spectacle of Filipino girls appropriately dressed behind the counters all formed a pleasing picture. "Corn Day" on this occasion was a typical out-of-door gathering, in which intelligence, enthusiasm, practical training and social interests all had their parts.—
L. R. S.

PENSIONADOS AT THE PHILIPPINE SCHOOL OF ARTS AND TRADES.

At present there is enrolled in the Philippine School of Arts and Trades a class of forty-five Insular teacher pensionados and thirteen student pensionados, of whom twenty-three are taking their second year's work at this school. Ten of them are classified as Grade VII, thirty-three as first year secondary, twelve as second year secondary, and three as third year secondary. Their shop qualifications vary from no experience at all to graduation from provincial trade schools with several years' additional teaching experience. Their previous training in drawing varies as much as does their experience in woodworking.

When the pensionado system was first introduced, the pensionados were put into one class irrespective of their qualifications. In academic work they were given a review of

arithmetic and English and a course entitled Home and Town Improvement which aimed at teaching in a practical way many things connected with their homes, their towns, and their schools. In shop work and drawing, the work was graded according to individual ability.

In July, 1911, a change was made in the academic program and they were placed in regular academic classes according to their attainments. The work in the seventh grade consists of the prescribed arithmetic with additional material based upon practical measurements, the completion of the grammar, civil government, and reading. The principal text in reading is Parton's *Captains of Industry*, an admirable set of biographies of men like Ezra Cornell, the mechanic, David Maydole, the hammer-maker, Elihu Burritt, the learned blacksmith, and Henry Bessemer, the steel-maker. This is supplemented by class use of daily papers.

The work in the first year secondary consists of algebra with additional work from Cobb's *Applied Mathematics*, Fee's work in English, and reading in *Great American Manufactures* supplemented by current magazines.

In the second year secondary, the algebra and geometry as prescribed by the Bureau is taught in connection with Cobb's *Applied Mathematics*, Fee's course in English is given, "*American Minerals*" supplemented by current periodicals is read, and work in physics is begun.

The third year secondary work is taken at the Manila High School as this class is not large enough to maintain a separate existence at the Trade School. Chemistry, and the prescribed English and mathematics are taken.

In woodwork, most of the pensionados are put into the woodbench department. Many pensionados as

well as the officials from the schools from which they come feel aggrieved because they are not given more advanced work. It has been found, however, that very few have really mastered all the exercises in Blackman's outline. Some claim to have completed all the exercises in their home schools, but a great many of them are unable to do the work as a teacher should, and must therefore review it. Moreover, most of the pensionados must take up bench work upon their return, and a course on the use of wood machines would be of far less value to them than further drill in accuracy in bench work. Individual instruction is given and no one is held back for the rest of the class. As soon as a student demonstrates that he is able to handle tools in a workmanlike manner he is given cabinet work graded according to his ability. In addition to this, he takes up the sharpening of tools including saw filing, staining, practice in wax and shellac finishing, instruction in methods of teaching woodworking, and in many cases, practice teaching.

Advanced pupils are placed in the wood machine shop where they receive a course in wood-turning, use of planer and circular saws, advanced cabinet work, and methods of teaching.

Three pensionados are enrolled in the building course which has been but recently instituted. At present the building class is erecting a reinforced concrete oil house. Two pensionados are studying the manufacture of pottery in the ceramic department.

In drawing, Bulletin 32 is taught in correlation with the regular trade school course. Blue prints of standard designs of furniture are made and furnished to pensionados upon request. Advanced pupils are given practice teaching by serving as assistants to the regular teachers.

Last year two of the pensionados completed the regular drafting course. This year, however, none was recommended by his superintendent for this special work although quite a number expressed their desire to take it up.

In addition to the regular class room and shop work, the pensionados conduct a literary society in which industrial topics form the basis of the literary activities. In athletics, the pensionados are required to take part in a regular series of group games and many of them are on the regular volleyball and track teams. They also participate in a large degree in the summer inspection visits to various business and manufacturing centers of the city.—W. W. M.

From information received from industrial supervisors and teachers the following industrial notes have been compiled with the object of encouraging the observance of proper sanitary and health precautions, as well as securing a better quality of work in industrial classes.

The work should be accomplished in a sanitary manner and with a proper regard for the health of the pupils. Care should be taken to have the work done where an adequate supply of fresh air will be assured. The practice followed in some schools of allowing the pupils to do their industrial work out of doors should be encouraged both at their homes and at school.

Pupils when working should be seated so as to allow the fullest expansion of the lungs. Their feet should rest on the floor or on a stool and their arms and bodies should be kept in a natural and unstrained position.

They should receive the light under the most favorable conditions.

As close application to certain kinds of industrial work is apt to be trying to the eyes, pupils should not be required to apply themselves for too long a period at work which may cause fatigue from undue strain upon the eyes.

Pupils should wash their hands often. Neat, clean, unwashed needlework is in demand, while careless, dirty, washed articles are not. Even hands which are apparently clean should be washed frequently; perspiration not only stains the cloth and thread, but causes them to become soft and difficult to handle. Perspiration also causes the metal utensils and tools to rust. Particularly in macramé work, or in the making of mats, hats, baskets and similar articles, the hands should be kept clean; it is very difficult to clean the finished articles.

Each pupil should have a measure or rule suitable to the class of work being done. In basketry and other forms of handweaving a measure at least one decimeter long should be made by each pupil. It should be marked off into centimeters and one centimeter should be marked off into millimeters. In sewing classes a tape measure is necessary as it is important that hems and other parts of an article, including the article itself, be of a given size. As an example it may be said that a piece of cloth one yard long and one yard wide should be measured and folded so as to make four handkerchiefs for men or nine handkerchiefs for women. The hem on men's handkerchiefs should be at least 13 mm. (one-half inch) wide, while the hem on ladies' handkerchiefs should not be more than 6 or 7 mm. wide. Without a measure it would be impossible to make these standard handkerchiefs.

Utensils and tools should be kept clean, sharp, and free from rust. In

making baskets dull tools produce "stringy" material or ragged ends. In cutting sewing materials it is impossible to make neat clean edges with dull scissors. In cutting embroidery thread dull scissors cause the thread to "pull" thus making the work uneven or leaving exposed ends. Not only are rusty needles dangerous, but they prevent the pupil from doing neat and clean work.

Before beginning any work, the directions for that line should be studied so that they can be followed in every detail. They are given to aid the pupils and thus make the work easier. The directions given are usually the best and by following them the pupil will avoid the necessity of undoing the work or doing it over again.

Only the best materials should be used. In handweaving the material should be of uniform size, color, and texture. It should be smooth and free from knots and other imperfections. By drying basket materials under different conditions, different shades or colors are produced. As an example it may be said that sun-dried materials produce lighter shades than do materials dried without exposure to the sun. Materials grown in low wet ground are darker than the same class of materials grown on high, dry ground. Materials taken from young plants are often lighter in color than those procured from older plants. Sometimes different shades are produced in sedges by suspending them by the roots with the blades hanging downward, and vice versa. Boiling weaving materials for mats, bags, baskets, and the like in vinegar, lemon juice or sap from different plants produces different shades.

In sewing, the selection of proper materials is of vital importance. First-class work done with cheap

materials is not advisable whether the work is intended for sale or for the personal use of the pupil. Teachers should use great care in comparing the thread to be used with the texture of the cloth; there is a tendency to use thread that is too coarse. In doing embroidery work on cloth of a fine texture it is best to select small delicate designs rather than the larger and coarser ones. Appropriate needles and hooks should be used; it is impossible to do fine work with coarse ones.

Both in hand weaving and embroidery work knots should be avoided unless the design or directions indicate that a knot is necessary. In most cases knots can be avoided in embroidery work by carefully overlapping the ends in the following manner: When the thread is about used up, take up a new thread and stitch it lightly into the cloth within the lines of the design. With the original thread embroider over the new thread for several stitches and then stitch it lightly into the cloth within the lines of the design. The new thread may then be taken up and embroidered over the old. In wrapping the rims and handles of baskets the ends of the material used may be hidden in a like manner.

During the industrial periods the teacher should pass among the pupils so as to detect mistakes and make constructive criticisms. A mistake should be corrected immediately and no work should be considered finished that contains errors. It is a good plan to allow pupils to criticize their own work and afterwards to correct the errors noted by them or by the teacher.

It should be the aim of both pupil and teacher to have each article completed better than the one that preceded it. With such an end in view, a high standard of workmanship for the school and for the division will be maintained.

DARUMACA¹ AND ITS USES.

Darumaca is found in abundance along brooks and at the foot of hills in Ilocos Norte. To-day it is being more and more extensively used as an industrial material in the public schools as well as in the homes of the people. Before American occupation this plant was used solely for tying rice straw and was preferred to bamboo on account of the long internodes of the stem. Occasionally hats made of this material were worn by Christians. Formerly some darumaca rice baskets were seen used by Tinguianes when they came down to the lowland, but where these were produced no one could tell, because in those days there was no market for home made articles such as baskets, hats and homespun cloth. The consumers themselves produced nearly everything they needed.

To-day darumaca is used in all the schools in Ilocos Norte. Hundreds upon hundreds of sun-hats are made in Pangasinan and imported into the Ilocano regions and even into the Cagayan Valley. These hats are finished in two shades, black and deep brown. Both

¹ *Donax cannaeformis*.

Ban-ban (Iloilo, Sorsogon, Albay, Mindoro, Cavite, Or. Negros, Capiz, Pampanga, Bohol, Tarlac, Laguna, Antique, *Ibanag* in Cagayan, Palawan, Occ. Negros, Tayabas).

Darumaca, Darumaka (*Zambal*, *Ilocano* in N. Vizcaya, Union).

Banay (*Ibanag*).

Bamban (Sorsogon, Ambos Camarines, Union).

Daromaca, Daromaka (*Ilocano* in Tarlac).

Langcuas (*Ilocano*).

Barasbarasan (*Tagalog*).

Aratan (*Gaddan* in N. Vizcaya).

Mattapal (*Isinay* in N. Vizcaya).

Mamban (*Leyte*).

of these look like genuine nito so that an inexperienced buyer who can not distinguish darumaca from nito is easily deceived. A darumaca hat wears longer than nito, but it costs less. The average price of a genuine nito hat is ₱4, while a darumaca hat of the same style and workmanship is worth ₱1.75.

In basketry, darumaca may be used either for spokes or weavers. It has several advantages over bamboo; it has long internodes, thus giving the surface of the woven article a smooth appearance. It yields four different colors: black, deep brown, light green, and white. If it is to be used for spokes it is always cut when young, for it is then strong and pliable. For weavers, either young or old stems are good.

In order to preserve the strength and pliability of this material, it is necessary to split it into quarters or eighths as soon as it is cut, then dry it in the sun for about a week. It is then ready for future use. If the whole round stem of darumaca is dried, it will wrinkle. The process of splitting will then be difficult, and the color and strength will be impaired.

If a deep brown is desired, scrape off the skin of a mature stem as soon as it is cut, split into quarters and dry in the sun. Begin to split darumaca at its upper end, and not at the base.

To produce white straw, scrape deeply the skin of a young stem, split it into quarters, and dry in the sun as usual.

For light green, the young stem of darumaca is prepared in a similar way, but without scraping off the skin.

If a black color is desired, scrape off the skin of a young stem and smoke it; that is, hold it over a slow fire. Burn a big heap of bamboo sticks covered with the darumaca

skin just scraped off and pass the darumaca many times over the fire. Continue doing this until it becomes black. When the stem to be smoked becomes very well heated, wipe it with a wet cloth. This is a quick way of smoking but the color produced is not very fast. The best way to make the color fast is as follows: Scrape off the skin as usual; split it into eighths and place the splints over a kitchen fire about a yard above the flame. Arrange them in such a way that the parts to be blackened are well exposed to the smoke. Burn stuffs that smoke well. Saleng (pine) and rice straw are good. Keep the fire burning slowly every day for about a week, until the splints are thoroughly blackened.

To prove that the color is fast, rub the colored stuff with a wet cloth. If the cloth removes much of the color from the splint, it is understood that the process is not yet complete and that it is necessary to smoke it more.—GIL RAVAL, division industrial supervisor, Ilocos Norte.

JUNIOR INDUSTRIAL TEACHERS.

At present there are forty-eight Junior Industrial Teachers in the service of the Bureau of Education. Forty are woodworkers, six are agriculturalists, one is an ironworker, and one is a domestic science teacher. It is understood, of course, that many more Filipino industrial teachers are employed by the Bureau of Education, but only forty-eight have thus far passed the civil service examination and have acquired the status of regular Junior Industrial Teachers.

It is of interest to note that eighteen of the forty successful woodworkers are returned pensionados from the Philippine School of Arts and Trades, four are graduates from the same school, and thirty-four have attended one or more sessions of the

Vacation Assembly. The Pangasinan trade school has six of the woodworkers to its credit. Five teachers were trained in the United States. Two studied at Bacolor, and Laguna, Capiz, Palawan, and Iloilo trade schools, have one representative each. One is unclassified.

Of the six agriculturalists, four received their technical training at Los Baños in the University, one was trained in the United States, and one studied agriculture at home in Cuyo after spending several years in the Philippine Normal School.

The only ironworker on the roll is Amado Ignacio who is a graduate of the Philippine School of Arts and Trades and is now an assistant in machine shop practice in the same institution.

The only female teacher on the list is Miss Pastora Sison from Pangasinan who is at present assigned to special work in lace-making and Irish crochet at the Philippine Normal School.

The Second Assistant Director is emphasizing the fact that all pensionados of the Philippine Normal School and the Philippine School of Arts and Trades are expected to take up some industrial courses, and that no pensionado should be excused from this work.

During the first week in September the large annual orders for drawing instruments and supplies were placed. These orders cover all supplies of this nature which will be required for the school year 1913-14, and include a quantity of freehand drawing supplies for girls.

Most of the foreign industrial materials which were ordered by the General Office in the early part of the present year have been received

They will be shipped out upon receipt of requisitions in accordance with circulars which have been issued recently.

REPAIR PARTS OF MACHINERY.

Outside of the larger cities in the Philippines, all workers with machinery, and especially trade school teachers, have had experience in trying to secure extra parts for the repair of machinery. In many cases this experience has included a wait of six months or more for parts that were not kept in stock by dealers here in the Philippines or by the Bureau of Supply, and consequently it has been necessary to order these extra parts from the United States. In the meantime, if the part needed is for the engine, the shop must be shut down for a long period of time. This shutdown would not be such a serious matter in the United States and in some of the larger towns here where milled lumber is available; but in most provinces, and especially in those that are doing a large amount of commercial trade work, the non-use of the machinery for several weeks or months is a serious handicap to the amount of work turned out by the school, as well as to the quality of instruction given. This latter point is explained by the fact that before making any article of furniture the pupil would be required to waste a large amount of time and energy in planing rough lumber.

It has been noticed in quite a number of provinces that the public has come to depend more or less on the school machinery for manufactured lumber. This is a good indication of progress and should be encouraged as much as possible; but it is difficult to build up a large trade with the public where the machinery is liable to be out of order for several months at a time.

In order to promote the efficiency of the machinery in all school shops,

the Bureau has found it necessary to carry a stock of repair parts for machinery in the storerooms of the General Office. These parts were ordered from the United States several months ago, and the engine parts have already arrived, while the parts for other machines are due to arrive in September.

These parts may be ordered direct from the Bureau of Education, using the names as given in the attached list. In case it is desired to order by telegram, reference should be made, to the parts needed by the serial numbers in the first column, e. g., "Machinery part "(filling in the blank by the number of the part desired).

List of parts.

ENGINE (12 H. P., M. & W.):

Note: All of these parts are for the Meitz & Weiss 12 H. P. Engine. Numbers refer to Catalogue No. 8, Meitz & Weiss.

- 1 Governor Weight Pin and Nut, Cat. No. 158.
- 2 Governor Weight Spring, Cat. No. 124.
- 3 Governor Slide, Cat. No. 160.
- 4 Suction Valves, Cat. No. 40 $\frac{1}{2}$.
- 5 Pressure Valves, Cat. No. 40 $\frac{3}{4}$.
- 6 Injection Nozzles, Cat. No. 61.
- 7 Injection Nozzle Tips, Cat. No. 61 $\frac{1}{2}$.
- 8 Crank Shaft Bearing Bushings (2 to set), Cat. No. 15.
- 9 Crank Pin Bushings, Cat. No. 136.
- 10 Crank Shaft Bearing Washers (2 to set), Cat. No. 100.
- 11 Fly Wheel Keys (2 to set), Cat. No. 88.
- 12 Ignition Balls, Cat. No. 64.
- 13 Lubricator Sight Feed, Cat. No. 97.
- 14 Piston Rings (4 to set), Cat. No. 87.

15 Connecting Rod Piston Pin Bushings, Cat. No. 137.

16 Float Valve Stems, Cat. No. 154.

PLANER (Fay & Egan 24 inch No. 2):

17 Feed Roller, Gears, Boxes and all connections for same as used on the machine.

18 Planer Knives, 24 inch, (2 to set).

19 Tongue & Groove Cutters.

20 Screws for holding planer knives to cylinder.

BAND SAW (Fay & Egan Band Saw No. 155):

21 Guide Roller Bushings.

22 Guide Plates.

CIRCULAR SAW (16 inch):

23 Mandrel, with yoke bearings and 5-inch pulley.

SPEED LATHES (11-inch Putnam):

24 Chisel Rests.

25 Driving Centers.

—B. I.

The General Office is preparing a circular which will provide for more adequate distribution of paper-covered books dealing with needlework. These books will be issued to the division superintendents, in so far as they are available, to be taken and accounted for the same as regular property.

THE USE OF EMBROIDERY FRAMES AND HOOPS.

The needlework editor of the Ladies' Home Journal says in an article headed "First Steps in Needle work":

"The fundamental principle of the art of embroidery lies in the nature of the ground work upon which the work is to be imposed." "Fabrics are made under tension and they come out of the loom smooth and equal throughout." "It is evident

then that if we are to lay a system of stitches over the surface to form another surface as a part of the foundation, we can not do this successfully unless we have it under tension." "Therefore framing embodies the 'first principle' and is absolutely essential to all work." "The embroiderer must rely in the first place on a stretched surface on which to place her stitches, and not on the possibility of being able to overcome the faults of drawing or looping by a hot iron when the work is finished."

He recommends, as the most convenient and scientific way of stretching fabrics, the use of the bar frame; on it the entire linen can be set up at once, and it has many other advantages over the hoop. However, he states that, if one prefers a less elaborate or less professional way of embroidering, the ordinary wooden hoops can be used; the hoop should never be held in one hand, but should be held by clamps so that both hands may be free to manipulate the needle and thread.

Regarding the size of the embroidery hoops used, it is stated that a 12-inch hoop is best for centerpieces and that a 7-inch hoop is best suited for linens to be decorated with small designs, such as doilies and handkerchiefs.—R. B. R.

As an aid to teachers in making out industrial outlines, a part of the industrial program prescribed for the division of Leyte is here given. It is thought that by making a careful study of all the industrial conditions found in a division, definite industrial courses may be prescribed for each grade.

The industrial program of the division of Leyte provides three courses, and all first grade pupils are required to take a double period

in one of them or a single period in two of them. The minimum time allotted to the first grade is sixty minutes daily.

The first years program in detail is as follows:

I. Simple Weaving (30 minutes).

Soft materials as buri, pandan, nipa and tikug.

1. Make book marks, napkin rings, square mat, wall pocket or fan.
2. Make square box or basket; round box or basket.
3. Make card cases or desk trays.

II. Simple Sewing (30 minutes).

Plain sewing; learn to handle the needle; make knot and make the plain sewing stitches; work with coarse material.

1. Teach basting, back-stitching, hemming, overcasting, cross-stitch, button-hole stitch, and sewing on buttons.

III. Simple Abaca Work (30 minutes).

Twisting, braiding and knotting with abaca (or maguey).

1. Selection of the fibers.
 - a. Similar to the sample chosen by the teacher.
 1. Certain length.
 2. Certain color.
 3. Certain size (fine or coarse).
 - b. Counting of fibers and laying in groups for stitching, twisting and braiding.
2. Twisting a short two-strand cord.
3. Braiding a simple three-strand cord.
4. Knotting; tying the abaca fibers; using the weaver's knot; some of the simplest macramé knots.

In the *Fancy Work Album* for July, 1912: The designs for *sforza* lace are poor and the thing itself seems a cheap imitation of the classical. The designs for colored embroidery are very ordinary, except the two corners for covers on page 7 which are pleasing. Among those for white embroidery, the cushion squares on page 9 and the night-dress case on page 13 are acceptable. The Milan lace on page 12 is fairly good but the rose pillow in the same page is very poor.

In *Modern Priscilla* for July, 1912: The Mosaic cross stitch, No. 12-7-1 promises a pleasing effect, although the unfilled corners give a feeling of incompleteness which would be overcome by adding a small harmonious unit. Except the pillow design, No. 12-7-2, which is very poor, the motifs in the designs on page 6 are well placed but have a compact effect which spoils their grace. This might be overcome by working them in a lighter way than that suggested. The *Hardanger* patterns on page 7 are very nice with the exception of the placing of the butterfly unit in fig. 6. On a full size collar this same proportion would make the unit too large, and it would be better to decrease the size and use two units across the back and an additional geometrical unit in the center back. This would admit of very nice arrangement at the corners. The *trousseau* garments, page 8, are pleasing with the exception of the nightgown design which is poorly placed and has superfluous ornament. Also the bands of lace from armhole to yoke in the chemise would better be omitted and the ends of the embroidery spray should be turned upward to fill the space. Another inset of lace over the closing in the yoke would improve the garment. Baby things on page 9 are good, as are also the darned borders on page 10. The

designs for punched embroidery, page 14, are well planned and very pretty but the shape of the reverse is clumsy. The embroidery designs for breakfast caps, page 15, are good, and the waist and bag patterns on page 16 are particularly good. The beauty of the fruit centerpiece, page 17, is doubtful.

The Bureau of Education recently received from Marshall Field & Co., Chicago, Illinois, embroidery goods for the purpose of comparing the work done in our schools with that of other lands. This shipment consisted of marked patterns on night gowns and towels, and of a dozen embroidered handkerchiefs together with a dozen blank handkerchiefs on which similar patterns were to be executed. The work was finished recently and forwarded to the Director of Education who is now in the United States and who will deliver it personally to Marshall Field & Co. The stamper designs were very beautifully executed in the Manila schools. The handkerchiefs were worked out in the province of Sorsogon and as a whole compare most favorably with the originals from which they were made. Many of them are of even better workmanship than the handkerchiefs submitted by Marshall Field & Co.

The school division of Samar is publishing an interesting monthly paper called the *Samar Bulletin* which is devoted to matters of interest to the teaching force. Among recent items is an article urging teachers and pupils to make war on the large number of flies now infesting the province. Another article speaks of the indifference and failure of the people to co-operate with the local officials in ridding the province

of the grasshoppers that have been doing considerable damage in some sections of the province and asks that the teachers endeavor to explain to the people that their prosperity depends upon their own activity in destroying these pests. An interesting item says that the towns of Sulat and Basey will furnish a collection of mats and nito baskets for a Christmas Bazaar to be held in Kansas City, Missouri, and it is expected that the excellence of the work will prove to be quite an advertisement for the industrial work of the province and develop a broader market for the local products.

The third corn demonstration notice to reach the General Office was from Malabon, Rizal province. The corn harvest in this section comes at such a time that the corn demonstrations must be held early in the school year. In most parts of the Islands, it is probable that a better order for the campaign can be followed out in which the demonstrations will come further along in the campaign.

An announcement received from Malabon advertised a Corn Carnival to be held at "Corn City" (Malabon), on September 7, 1912. The program specified corn demonstrations, music, athletic contests, and then more corn features. The breakfast and dinner menus called for the following dishes:

BREAKFAST MENU.

Corn Mush, Carabao Cream.
Corn Cakes, Corn Sirup.
Corn Coffee, Cream.

DINNER MENU.

Corn Oysters.
Corn Soup.
Corn Meat.
Corn Vegetables.
Corn Bread.
Corn Salad.
Corn Desserts.

A new booklet entitled "Primer of Industry" is being put into the field for use in Grade I. The author is Austin Craig. About two years ago Mr. Craig made a careful study of industrial teaching in the schools of Japan; and many of the ideas worked into this little book are the result of impressions gathered on that trip, although in the main the booklet may be considered as a compendium of the Grade I busy work carried on in the Philippine schools for several years past.

The work is progressive, beginning with stick laying and passing up through such exercises as tablet and tile laying, tangrams, seed and shell work, grass and string ornaments, paper and leaf perforating and sewing, splint weaving, and buri interlacing, to regular hand weaving, involving the making of mats, bags, fans, trays, picture frames, and baskets. The booklet is replete with illustrations and has a pictorial dictionary.

An exceptionally commendable feature is that the materials prescribed for the actual schoolroom work are easily within the means and reach of even the poorest barrio school.—J. D. D.

A general trade school machinery outfit is being forwarded to the Division Superintendent of Schools for Palawan. It will be installed at Cuyo.

The following bulletins and circulars of the Bureau of Agriculture are issued free of charge by that Bureau:

Bulletins:

- No. 7. The Garden. (English and Spanish.)
No. 12. Abacá (Manila Hemp). (Revised.) (English and Spanish.)

Bulletins—Continued.

No. 13. The Cultivation of Ma-guey in the Philippine Islands. (English and Spanish.)

No. 17. Coconut Culture. (English and Spanish.)

No. 18. The Mango. (English.)

Circulars:

No. 3. Cultural Directions for Young Para Rubber. (English and Spanish.)

No. 6. Cultural Directions for Papaya. (Visayan, Tagalog, English, and Spanish.)

No. 7. Coconuts. (English and Spanish.)

No. 9. Directions for Planting Vegetables and Flowers. (Tagalog, Ilocano, Pangasinan, Cebuano Visayan, Bicol, English, and Spanish.)

No. 10. Directions for Planting Forage Seeds and Roots. (English and Spanish.)

No. 13. Rats. (English and Spanish.)

In one of the schools in the southeastern part of the United States an 11-year old boy named Jerry Moore raised 228 bushels of corn on one acre of land. This is in the proportion of 340 cavans of corn from one hectare. This boy was a member of one of the Boys' Corn Clubs which enrolled some 64,000 boys in an extensive corn raising contest, carried on under the United States Bureau of Agriculture. It is not to be expected that any boy in the Philippines can equal or exceed this record, but each contestant in the present corn growing contest should produce the largest possible quantity of corn from the land cultivated. The boys must know that high yields of corn are the result of careful seed selection, well fertilized soil, and adequate cultivation. Here in the Philippines, the champion corn grower should be a boy who has the assistance of his

teacher in the work. The parents and neighbors of the school boys are watching them in their work with corn, and they will follow the same methods if the results show that it is worth while. From the same area, the corn crop of the Philippines should be double what it now is. No boy should be satisfied with the small yield of eight cavans per hectare which is the average corn yield in the Philippines now.

LOCUSTS IN CEBU AND NEGROS.

The leading corn producing provinces of the Islands, Cebu, Oriental Negros, and Bohol, have recently been visited by swarms of locusts which have devastated the country and along with other things have destroyed much of the young corn crop. The vegetation has been eaten even to the tough leaves of the coconut trees. The locusts traveled in swarms so thick that a man walking a few yards away could hardly be discerned. Leaves of the coconut trees, ordinarily strong enough to support the weight of a boy, were broken down by the masses of locusts which lighted upon them. A rice sack held open and carried along for a few yards through the flying insects would be half filled with a seething mass of locusts.

Wagon loads of these pests have been captured by means of sacks and nets and buried alive. Some of the farmers, with the aid of the women and children, have tried by beating tin pans, waving red and white cloths, and shouting, to frighten off the swarms, but to no avail. The locusts are great travelers, passing with ease over high mountains and frequently crossing from island to island over sea channels several miles wide.

Coming as it does after a year of excessive drought, this scourge of

locusts will cause great distress in the devastated country. As in most other parts of the Orient, locusts are an article of food in some sections of the Philippines. They are boiled and roasted and form a dish which is well liked by the people.

A corn demonstration in connection with a general industrial exhibit was held in the town of

and normal institutes of other divisions.

On September 1, Bohol led all school divisions in the number of subscriptions received, with about 50. Cebu and Tayabas may also be mentioned among the divisions which have taken an active interest in the matter of subscriptions.

In Bohol an arrangement was



Photo by C. S. Jones.

The masses of locusts broke down the strong leaves of the coconut trees. It is interesting to note that in this picture they do not attack the banana leaves.

Tanauan, Batangas, on Saturday, August 31. One of the attractive features of the exhibit was a unique and instructive display of the growing plants that furnish material for the industrial classes. These plants were shown along with many of the articles made from the raw materials which they produce. Through such displays, the teachers, pupils and general public will become better acquainted with the economic value of the local plants. The plan is offered as a suggestion for the industrial

made with the Provincial Treasurer for placing at Government expense subscriptions for each municipality in the province. This plan has already been recommended to division superintendents and teachers in circular form. Attention is invited to the official statement on page 70 of the July CRAFTSMAN, which treats of this matter.

During the Batangas normal institute, which is to be held at Ba-

tangas from October 7 to November 1, 1912, it is planned to hold an industrial exposition of the best articles fabricated in the schools of the province since the beginning of the school year. In anticipation of this provincial exhibit, local industrial exhibits will be held in each district at least a week before the normal, and at this time the best articles in each line of work will be selected for the provincial exposition.

It is the intention to have each class represented by the work accomplished by it during the year and special efforts are being made to have a full exhibit of first and second grade sewing. During the exposition a committee will be appointed to judge the work of the different districts. This friendly rivalry among the districts should result in a splendid industrial display.

THE NEW COURSE IN SHOP WORK.

Ten thousand copies of a revised course in shop work for primary and intermediate grades are being distributed to all school divisions. Of these, nearly 8,000 copies are to be issued to intermediate shop pupils as a text, and the remaining 2,000 are for teachers and school officials.

This course appears as Circular No. 97 of the current series.

The circular will be used as a text in primary shops during the balance of the school year, or until the new text is ready for issue, probably about the beginning of the next school year. An intermediate text will be issued a few months after the primary text. Both of these will be in book form, well illustrated, and they will doubtless be appreciated by all who are interested in shop work.

Simultaneously with the appearance of Bureau of Education Civico-Educational Lecture No. 8, Corn, the Bureau of Agriculture also published its Bulletin No. 23, on Corn Culture in the Philippine Islands. This bulletin is somewhat more comprehensive and technical than Lecture No. 8, and would be a valuable reference for teachers who are giving this subject special attention. The Bureau of Agriculture is ready to supply a limited number of requests from teachers for Bulletin No. 23.

Corn Culture in the Philippine Islands was prepared by Mr. Sam H. Sherard, agricultural inspector, under the direction of Mr. H. T. Edwards, chief, demonstration and extension division, Bureau of Agriculture.

BUREAU OF EDUCATION PUBLICATIONS.

(Abbreviated list.)

ANNUAL REPORTS:

- Eighth Annual Report of the Director of Education, 1908. (Supply limited.)
- Ninth Annual Report of the Director of Education, 1909.
- Tenth Annual Report of the Director of Education, 1910. (Supply limited.)
- Eleventh Annual Report of the Director of Education, 1911.
- Twelfth Annual Report of the Director of Education, 1912. (In course of preparation.)

BULLETINS:

- 5. Notes on the Treatment of Smallpox.
- 10. Government in the United States. Prepared for use in the Philippine Public Schools.
- 24. Outline of Year's Course in Botany and Key to the Families of Vascular Plants in the Philippine Islands.
- 29. Constructive Lessons in English, Designed for Use in Intermediate Grades.
- 31. School and Home Gardening.
- 32. Courses in Mechanical and Freehand Drawing, for Use in Trade and Intermediate Schools.
- 33. Philippine Hats. (Supply limited.)
- 34. Lace Making and Embroidery.
- 35. Housekeeping and Household Arts—A Manual for Work with the Girls in the Elementary Schools of the Philippine Islands.
- 36. Catalogue and Announcement of the Philippine Normal School. (Edition exhausted.)
- 37. School Buildings and Grounds.
- 38. School Buildings—Plans, Specifications and Bills of Material. (In course of preparation.)
- 39. A Manual of Freehand Drawing for Philippine Primary Schools. (In course of preparation.)
- 40. Athletic Handbook for the Philippine Public Schools.
- 41. Service Manual of the Bureau of Education.
- 42. Intermediate English II—Notes, Directions, and Aids to the Preparation of the Correspondence Study Course.
- 43. Catalogue of the Philippine School of Arts and Trades, 1911-12.

- 44. Libraries for Philippine Public Schools. (In course of preparation.)

CIVICO-EDUCATIONAL LECTURES:

- 1. The Rights and Duties of Citizens of the Philippines. (Supply limited.)
- 2. The Prevention of Diseases. (Supply limited.)
- 3. Rice. (Supply limited.)
- 4. Diseases of Animals. (Supply limited.)
- 5. Coconut Beetles. (Supply limited.)
- 6. The Housing of the Public Schools. (Supply limited.)
- 7. Coconuts.
- 8. Corn.

THE TEACHERS' ASSEMBLY HERALD

- Volume I, 1908. (Edition exhausted.)
- Volume II, 1909. (Edition exhausted.)
- Volume III, 1910. (Edition exhausted.)
- Volume IV, 1911. (Supply limited.)
- Volume V, 1912. (Supply limited.)

TEXTBOOKS:

- Selected Short Poems by Representative American Authors.
- Commercial Geography; the Materials of Commerce for the Philippines.
- Macaulay's Samuel Johnson; Emerson's Self Reliance; Lincoln's Gettysburg Address.
- An Introduction to the Study of Colonial History. (In course of preparation.)

MISCELLANEOUS:

- Woodworking, a Manual of Elementary Carpentry for Philippine Public Schools.
- Some Recipes for Preparing Jellies, Preserves, Pickles, and Candies from Philippine Fruits. (Supply limited.)
- Syllabus of Economic Conditions in the Philippines. (Supply limited.)
- A Statement of Organization, Aims, and Conditions of Service in the Bureau of Education.

THE PHILIPPINE CRAFTSMAN:

- Volume I. (Now current.)

SUBSCRIBER'S COPY.

